

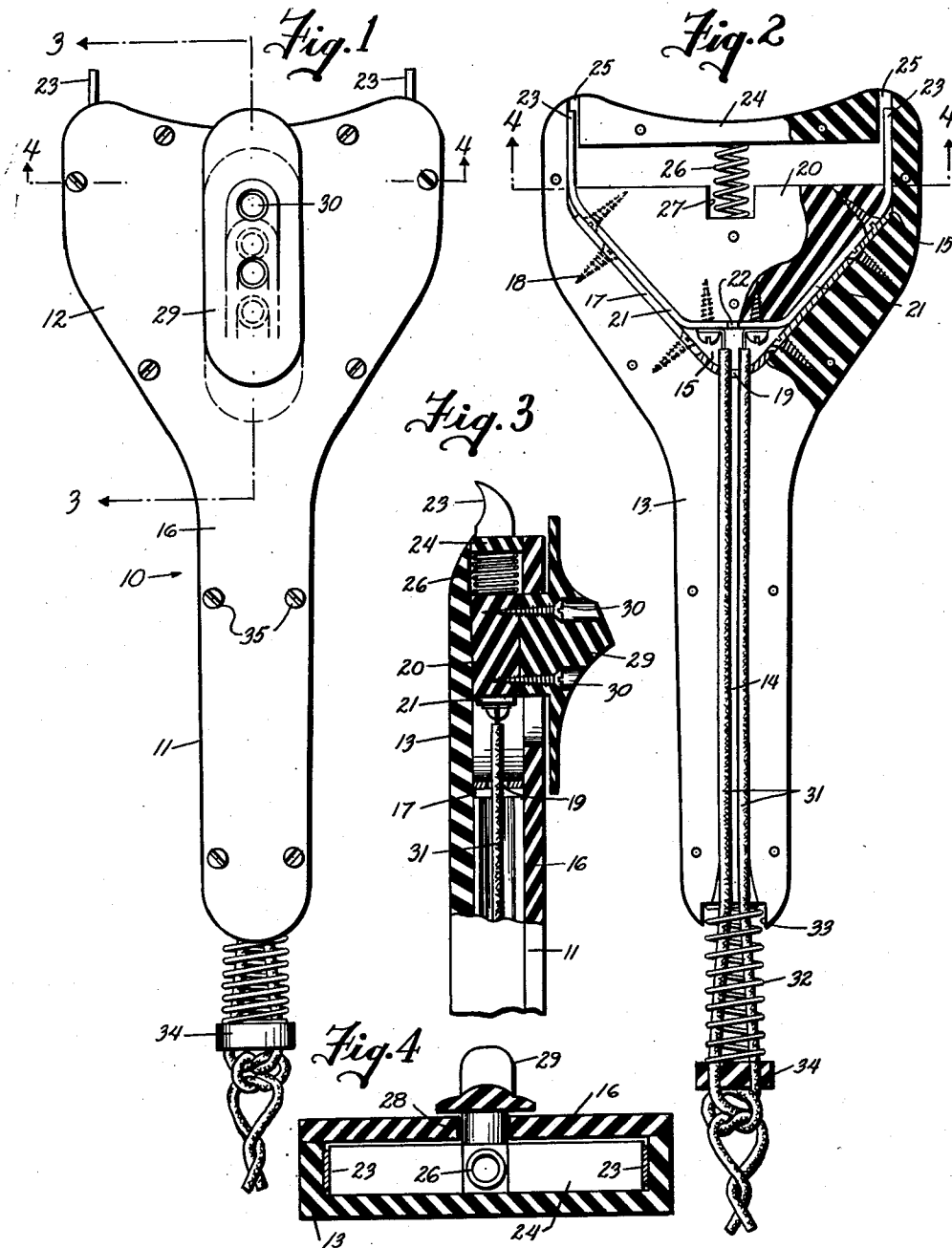
May 19, 1953

G. G. TRUAX

2,639,341

SAFETY BATTERY CONNECTOR SWITCH

Filed April 27, 1948



INVENTOR.

George G. Truax

BY

McMorrow, Berman & Davidson
ATTORNEYS

UNITED STATES PATENT OFFICE

2,639,341

SAFETY BATTERY CONNECTOR SWITCH

George G. Truax, Renton, Pa.

Application April 27, 1948, Serial No. 23,501

3 Claims. (Cl. 200—51)

1

This invention relates to improvements in battery connectors, and more particularly to an improved safety connector for connecting a battery, or equivalent source of electrical energy, to an explosive detonator, or an equivalent device.

In electrically discharging explosives, a number of accidents have been caused by premature explosions caused by some part of the firing circuit, and particularly the contacts of the battery connector, coming into contact with a live wire or other source of electrical energy while the charge is being prepared and the firing wires connected thereto. Various regulations have been promulgated to overcome this situation, one such regulation requiring that the contacts of the connector be electrically connected together, or short-circuited, until the proper time for firing the charge.

With present-day equipment this is not always easy to accomplish and is frequently forgotten with the result that an unnecessarily large number of premature explosions still occur in mining and quarrying operations.

It is among the objects of the present invention to provide an improved safety connector so constructed and arranged that the contact points thereof are automatically retracted into a casing of electrically insulating material and are electrically inter-connected or short-circuited when the connector is not in use, thereby substantially eliminating any danger of premature explosions in the use of the connector for firing explosive charges, which connector is also effective to avoid injury to a person using it by arcing or sparking of the current at the contact points, and which connector is automatically made safe when not in use, is light in weight, easy to handle, and simple, durable and economical in construction.

Other objects and advantages will become apparent from a consideration of the following description and appended claims in conjunction with the accompanying drawing, wherein:

Figure 1 is a top plan view of a battery connector, illustrative of the invention;

Figure 2 is a view similar to Figure 1 with the top cover of the connector casing removed;

Figure 3 is a longitudinal cross-section of a fragmentary portion of the connector and is taken substantially in the plane of the section line 3—3 of Figure 1; and

Figure 4 is a transverse cross-section taken substantially in the plane of the section line 4—4 of Figure 1.

With continued reference to the drawing, the

2

improved battery connector comprises a hollow, paddle-shaped casing, generally indicated at 10, having a substantially cylindrical handle portion 11 and a hollow receptacle portion 12. This casing preferably comprises a body portion 13, illustrated in Figure 2, having a groove 14 extending longitudinally through the handle portion and a generally triangular concavity 15 in the receptacle portion 12 thereof with an apex of the triangular concavity at the adjacent end of the handle portion 11, and a cover plate 16 overlying and secured to the open face of the body portion 13.

A V-shaped strap 17 of electrically conductive metal is secured to the inner side walls of the body portion 13 by suitable means, such as the screws 18, and is provided at its apex with an opening 19.

A triangular block 20 of electrically insulating material is slidably mounted in the interior of the receptacle portion of the casing and a pair of straps 21 of electrically conductive metal is secured to the divergent sides of this block in position such that they are substantially parallel to the legs of the V-shaped strap 17. The straps 21 are separated at their adjacent ends, as indicated at 22, and are extended at their outer ends beyond the corresponding end of block 20 to provide respective contact points 23 extending beyond the block 20. An end wall 24 is secured in the open end of the receptacle portion of the casing and is spaced at its ends from the corresponding side walls of the body portion 13 to provide passageways 25 in which the contact points 23 are slidably received.

A coiled compression spring 26 is disposed between the end wall 24 and the block 20 being seated in a recess 27 provided in the block, which spring acts to resiliently force the block 20 inwardly of the receptacle portion of the casing until the block-carried straps 21 are in electrically conductive contact with the V-shaped strap 17 and the contact points 23 are retracted into the hollow casing, as clearly illustrated in Figure 2. When the block 20 is in the illustrated position the block-carried straps 21 are electrically inter-connected or short-circuited by the V-shaped strap 17 and the connector is thereby rendered inoperative to conduct current to an explosive detonator.

The side wall 16 of the casing is provided with an elongated opening 28 adjacent the inner end of the handle portion 11 and a thumb button 29 is secured to the block 20 by suitable means, such as the screws 30, and extends through the

opening 28 so that the block 20 can be manually moved to separate the straps 21 from the V-shaped strap 17 and project the contact points 23 out of the corresponding passageways 25, thereby rendering the connector operative.

A pair of electrical conductors 31 extends through the longitudinal groove 14 in the handle portion of the casing and through the opening 19 in the V-shaped strap 17 and is electrically connected one to each of the block-carried straps 21, the opposite ends of these conductors being connectible to an explosive detonator, not illustrated.

A guard spring 32 is seated in a recess 33 provided in the outer end of the handle and bears at its outer end against a button 34 apertured for the passage of the conductors or wires 31 therethrough, the wires being knotted together at the outer side of the button. This guard spring and button provide a protective guard for the portions of the conductors extending out of the handle portion of the connector casing.

The cover plate 16 is detachably secured to the body portion 13 by suitable means, such as the screws 35, and the width of the receptacle portion 12 is such that the contact points 23 are spaced apart a distance substantially equal to the distance between a pair of conventional battery poles.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are, therefore, to be embraced therein.

What is claimed is:

1. An electrical connector comprising a hollow casing of electrically insulating material including a handle portion and a receptacle portion, said receptacle portion having a generally triangular interior with an apex at the adjacent end of said handle portion and an elongated opening therein adjacent said handle portion, a V-shaped strap of electrically conductive material secured to the interior wall of said receptacle portion and having an opening in the apex portion thereof, a triangular block of electrically insulating material in said receptacle portion slidable toward and away from said V-shaped strap, a pair of straps secured to said block, one on each divergent side thereof, and each providing a contact point extending outwardly of the side of said block remote from said handle portion, an end wall extending

across the open end of and spaced at its ends from the side walls of said receptacle portion to provide respective passageways for said contact points, a compression spring between said end wall and said block resiliently urging said block inwardly of said casing until said contact points are retracted into said casing and said block-carried straps are in electrical contact with said V-shaped strap, a thumb button secured to said block and extending through the elongated opening in said casing for moving said block to separate said block-carried straps from said V-shaped strap and project said contact points out of said casing, and a pair of electrical conductors extending through said handle portion and the opening in said V-shaped strap and electrically connected one to each of said block-carried straps.

2. An electrical connector comprising a hollow casing of insulating material having a handle portion and an elongated opening therein adjacent said handle portion, a block of insulating material movable in said casing, a pair of contact points carried by said block retractible into and extendible out of said casing upon movement of said block, a spring in said casing operative to move said block in a point-retracting direction, a thumb button secured to said block and extending through the opening in said casing to move said block in a point-projecting direction, a pair of conductors extending through said handle and electrically connected one to each of said contact points and means in said casing operative to short circuit said contact points when in retracted position.

3. An electrical connector comprising a hollow casing having a handle portion and an elongated opening through the wall thereof adjacent said handle portion, a block of insulating material movable in said casing, a pair of spaced-apart contact points carried by said block extendible out of the end of said casing opposite said handle and retractible into said casing, spring means in said casing operative to move said block in a point-retracting direction, a thumb button secured to said block and projecting through the opening in said casing to move said block in a point-extending direction against the force of said spring means, a pair of electrical conductors extending through said handle and electrically connected one to each of said contact points, and means in said casing adjacent said block operative to electrically inter-connect said contact points when in retracted position.

GEORGE G. TRUAX

No references cited.