

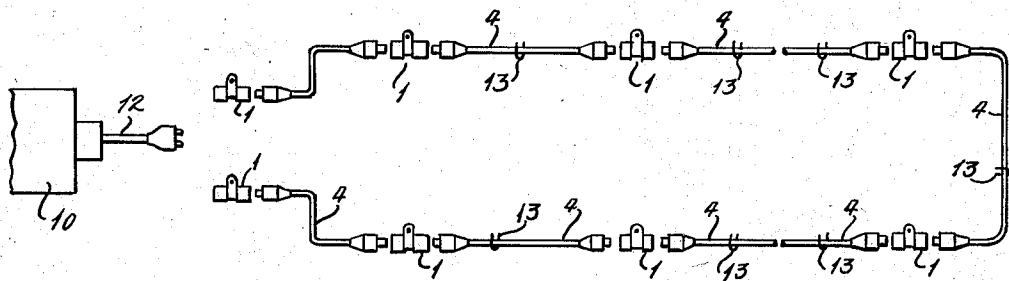
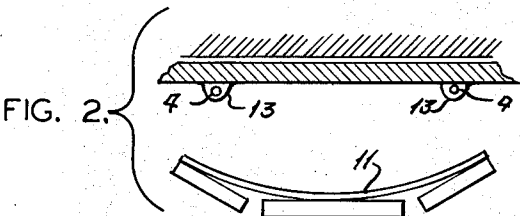
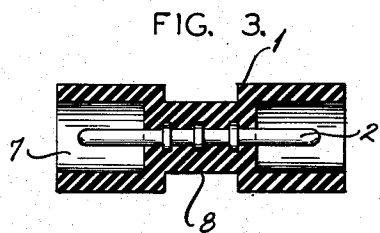
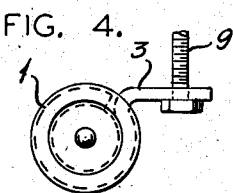
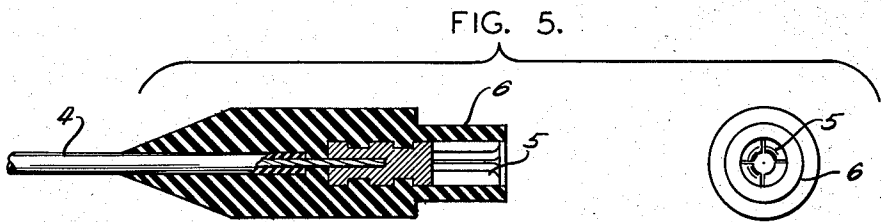
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PROTECTIVE SYSTEM

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FIG. 1.



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PROTECTIVE SYSTEM

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3 Claims. (Cl. 198—203)

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This invention pertains to a protective system for mine belts and similar installations in which an extended working element, such as a conveyor, is normally unattended for considerable lengths thereof and is liable to accidental damage at any point therealong.

One of the objects of this invention is to provide means operable at any point along such a working element to arrest its operation.

Another object is to provide such means which will usually be operated by the cause of the damage such as a substantial fall of material from the mine roof.

Another object is to provide such protective means which, after operation in response to an accident, may be manipulated at the point of such operation to start the working element for resumption of normal operation.

Further objects will appear from the following description in which will be set forth an illustrative embodiment of this invention. It is understood, however, that this invention is susceptible of various embodiments, within the scope of the appended claims, without departing from the principles or spirit of the invention.

In accordance with this invention, generally stated, a control circuit for the working element is strung along the path of said element. This circuit is divided into short sections provided by short cables having plug-socket connectors at their ends. The term "plug-socket" is used herein to designate a connector which may be of either the plug or socket type. These short cable sections are connected to each other at complementary connectors mounted at intervals on the mine roof or other available support along the travel of the working element. Thus by pulling any such cable section to separate the plug-socket connectors at either end thereof, the control circuit may be broken to stop the operation of said element.

A preferred embodiment of this invention is illustrated in the accompanying drawing, in which

Figure 1 is a diagram showing the lay-out of a control circuit in accordance with this invention,

Figure 2 is a diagrammatic sectional view of a mine-belt installation showing one way of mounting the control circuit adjacent the belt,

Figure 3 is a longitudinal section of one of the supporting connectors,

Figure 4 is an end view of the same with a hanger assembled thereon, and

Figure 5 shows sectional and end views of the

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complementary connector on one end of a cable section.

As shown in Figures 1 and 2, a compartment 10 houses suitable control equipment for the drive of the mine belt 11. An electric control circuit is brought out of the compartment 10 by a cable 12. The circuit is formed into a loop, as shown in Fig. 1, extending along the travel of the belt 11. Connectors, indicated generally at 1, are supported at intervals along the travel of the belt. As shown in Fig. 3, each of these connectors comprises a resilient body of rubber or the like molded upon a metallic bar 2 formed with plug-socket contacts at its opposite ends, forming thus a double-ended connector. The medial portion of the body 1 is reduced in size as indicated at 3 for interlocking engagement with a hanger 3 as shown in Fig. 4. The hanger 3 may be attached by means of a screw 9 or other suitable fastener to the timbers at the mine roof or other suitable support.

The circuit loop is made up of a succession of short sections of cable 4 each equipped at each end thereof with a plug-socket contact 5 adapted for engagement with the contact 2 and embedded in a molded body of rubber, or the like, and having a reduced spigot portion 6 fitting into a shroud portion 7 on the connector 1 with a water-tight fit. The cable sections 4 are supported mainly by the connectors 1 but may be additionally supported intermediate said connectors by staples 13 or similar devices. These should be loose enough to permit the cable to slide therethrough so that it may be pulled out to break the circuit.

It will be seen that this invention provides a control circuit which may extend along the entire travel of the working element and which may be operated protectively at any point therealong. Men riding the belt may, in an emergency, pull one of the cable sections 4 and stop the belt. A substantial fall of material from the mine roof will pull out one or more sections and stop the belt, while the spacing of the cables may be made such that fall of small pieces from the roof will pass between the cables without interrupting the operation of the belt. Inspectors who notice a damaged belt while walking beside it may stop the conveyor at any place along its length, determine the extent of the damage and re-start the conveyor. The circuit loop may be extended to any distance. The connectors and cable sections are of simple construction, easily replaceable when damaged and make water-tight connections to insure continuous reliable op-

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eration. In the embodiment illustrated the connectors 1 have like contacts at both ends (both male) while the cable sections also have like contacts at both ends but complementary to those of the connectors 1. Accordingly, the cable sections need not be oriented end for end, but any cable section will fit any of the connectors 1 in either position.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. In combination with an extended working element such as a conveyor, a protective system comprising, a multiplicity of plug-socket connectors supported at intervals along the working element, and cable-sections each having complementary plug-socket connectors at its ends engaging said supported connectors to form a complete control circuit for the working element, said cable-sections being short and arranged so that a pull on any one will release one of its connectors from a supported connector to open said circuit.

2. In combination with a mine belt conveyor, a protective system comprising, a series of plug-socket connectors supported at intervals along said conveyor, and cable-sections having complementary plug-socket connectors at their ends engaging said supported connectors to form a complete control circuit for said belt, said cable sections being arranged along said belt so that a fall of material from the mine roof upon one of said sections will release one of said connectors to open said circuit.

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3. In combination with an extended working element such as a conveyor, a control circuit therefor comprising a multiplicity of short sections of cable all connected successively to complete said circuit, each of said sections carrying contacts electrically and mechanically releasable by straight pulling force from and remountable with complementary contacts connected to successive sections, and means supporting said sections at a multiplicity of points along the length of said circuit against substantial lengthwise movement of said circuit so that a pull on any of said sections at right angles to its length will release at least one of its contacts to open said circuit.

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