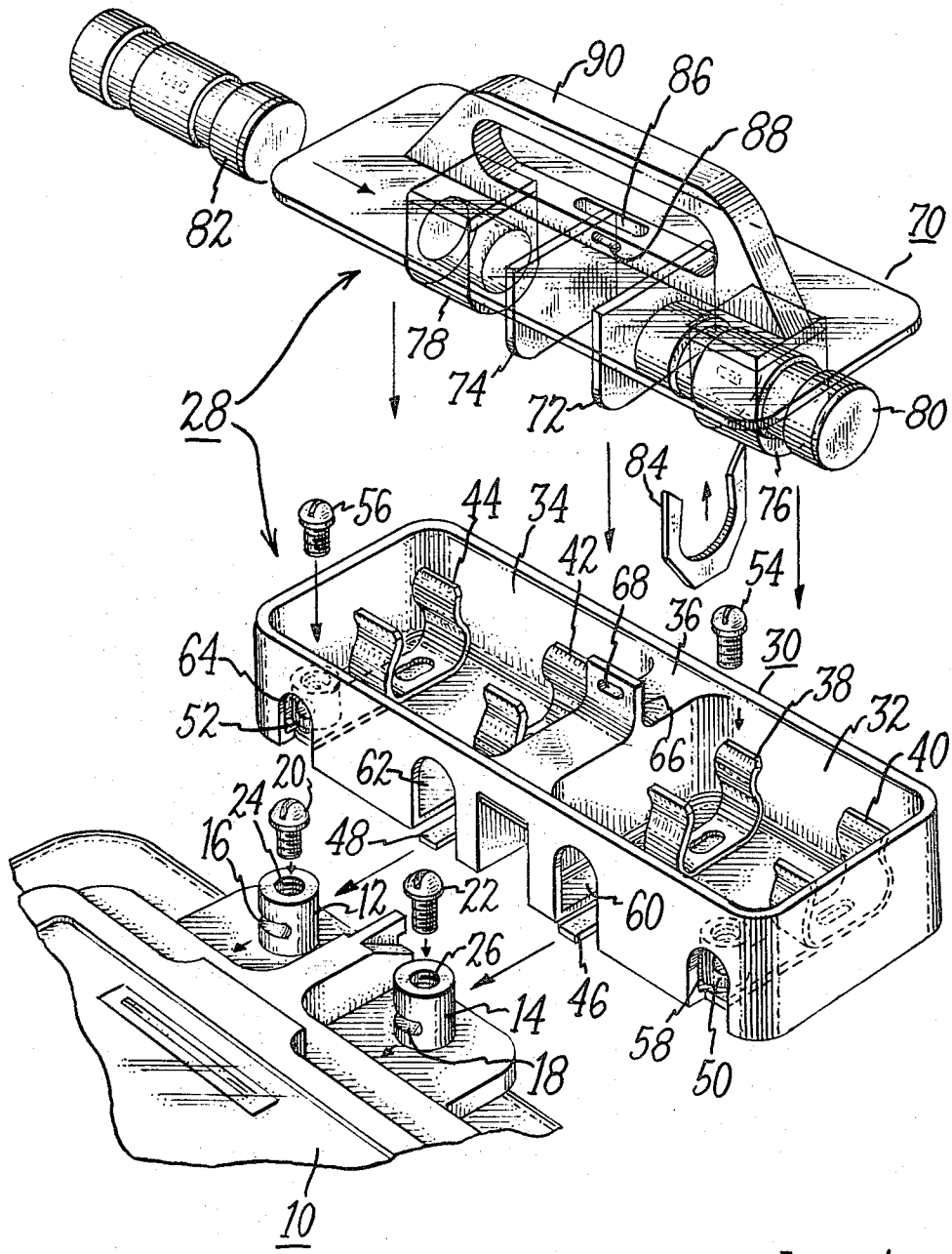
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REMOVABLE FUSE HOLDER FOR AN INSTRUMENT TRANSFORMER

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REMOVABLE FUSE HOLDER FOR AN INSTRUMENT TRANSFORMER

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ABSTRACT OF THE DISCLOSURE

A removable fuse holder for converting unfused instrument transformers to fused instrument transformers. The fuse holder includes a container which is a rectangular member divided into two sections, each section being provided with the fuse clips to make electrical contact with the ends of a cartridge type fuse. One fuse clip in each section is provided with a bar member which may be inserted and electrically and mechanically secured to a primary terminal of an instrument transformer. The other fuse clip in each section is provided with a terminal member which becomes the primary terminal of the transformer when the fuse holder is in place. A cover is provided for the fuse holder, the cover carrying a pair of fuses which makes electrical contact with the fuse clips when the cover is in place. Sealing means are provided for receiving utility sealing devices to seal the cover to the container of fuse holder.

Background of invention

This invention relates to instrument transformers and more particularly to a removable fuse holder for instrument transformers.

As is well known to those skilled in the instrument transformer art, and particularly potential transformers, it is often considered necessary to provide primary fuses to such transformers. These fuses are required to protect the transformer and the system to which the transformer is connected when a short circuit develops in the secondary of the transformer. The usual practice is to provide separate primary fuses in the primary line before connecting them to the transformer. Therefore, many instrument transformers are made without provisions for primary fuses. However, in other primary circuits, where it is either undesirable or impractical to provide separate primary fuses, it is, of course, necessary to use transformers which have provisions for accommodating primary fuses. Also, as is well understood, in some instrument transformers, only a single fuse is used since only one primary terminal is provided, with the second terminal being a neutral terminal. As will be apparent, transformers having provisions for fuses are of somewhat different design than unfused transformers.

The various design for both fused and unfused transformers require the utilities to stock both types of transformers, thus increasing their inventory. These various designs also require the manufacturer to manufacture the separate designs, which increase the cost of each type of transformer due to the smaller quantity of each transformer produced. From the above, it will be apparent, that there is presently a need in the instrument transformer field for a fuse holder which may be attached or removed from an instrument transformer as required by the various types of primary circuits with which the transformer is to be used.

It is therefore one object of this invention to provide a removable fuse holder for use with instrument transformers.

A further object of this invention is to provide a removable fuse holder which may be secured to the primary

terminals of an instrument transformer, such fuse holder having another set of primary terminals.

A still further object of this invention is to provide a fuse holder for instrument transformers having a container member with fuse clips and a cover member carrying fuses to connect with such fuse clips.

Summary of invention

In carrying out this invention in one form, a removable fuse holder is provided which comprises a fuse container which may be secured to the primary terminal or terminals of an instrument transformer. The fuse container is provided with at least one pair of fuse clips, one clip having means to secure the container to one primary terminal of an instrument transformer. The other fuse clip is provided with a terminal means which becomes the primary terminal of the transformer. A cover member is provided fitting over the fuse container and carrying a fuse for each pair of fuse clips. If desired, mating portions may be provided to allow a utility seal to be secured to the fuse container and cover, thereby sealing the fuse holder.

The invention which is sought to be protected will be particularly pointed out and distinctly claimed in the claims appended hereto, however it is believed that this invention and the manner in which its various objects and advantages are obtained as well as other objects and advantages thereof will be better understood from the following detailed description of a preferred embodiment thereof, particularly when considered in connection with the accompanying drawing.

Brief description of drawing

The single figure of the drawing is an exploded perspective view of a preferred embodiment of a fuse holder according to this invention showing the manner of attachment of such fuse holder to an instrument transformer.

Description of preferred embodiment

The single figure of the drawing shows the present preferred embodiment of the fuse holder of this invention. It is shown as being secured to both primary terminals of an instrument transformer and having a pair of fuses, one for each primary terminal. Of course, it will be obvious that for these instrument transformers having only a single primary terminal and a neutral terminal, it would only be necessary to provide a single fuse and the fuse holder would, therefore, be one which would contain the single fuse. It will also be apparent to those skilled in this art that various constructional details could be changed without departing from the spirit and scope of this invention.

In the drawing, a portion of an instrument transformer **10** is shown having a pair of primary terminals **12** and **14**. In the usual manner, these terminals **12** and **14** are provided with openings **16** and **18**, respectively, for receiving primary leads (not shown) and screws **20**, **22** are provided fitting in the threaded holes **24**, **26**, respectively, to secure such primary leads (not shown) to the primary terminals **12** and **14**.

In accordance with this preferred embodiment of the invention a fuse holder **28** is provided which comprises a container **30**, generally of rectangular shape, and a cover member **70**, which fits on the fuse container. As is shown, the fuse container is divided into two compartments or sections **32**, **34** by a divider **36**. The fuse container **30** is preferably made of an insulating material such as glass-filled thermoplastic polycarbonate resinous material which may be readily molded to the desired shape. Each compartment or section **32**, **34** is provided with a pair of fuse clips **38**, **40** and **42**, **44**, respectively, which may be molded in place, or secured by screws or other desired means, to the fuse container **30**. One fuse clip

in each compartment is provided with a bar or conductor member, bar **46** on fuse clip **38** and bar **48** on fuse clip **42**. As is indicated in the drawing, these bars or conductors will be inserted into the opening **18, 16** respectively of the primary terminals **14, 12** of the instrument transformer **10**. The other fuse clip in each compartment is provided with a primary terminal, terminal **50** on fuse clip **40** and terminal **52** on fuse clip **44**. Each of these terminals **50, 52** is provided with an opening to receive a primary conductor and has a threaded member **54, 56**, respectively, to secure such primary conductor to the primary terminal.

In the preferred form shown, it will be noted that the fuse container **30** is provided with four arched openings, **58, 60, 62** and **64**, two in each compartment or section. Openings **60** and **62** allow the fuse container **30** to be placed over the primary terminals **18, 16** respectively and the threaded members **20, 22** to be contained within the fuse container **30**. In a similar manner, openings **58** and **64** allow the primary conductors to be inserted into the primary terminals **50, 52** and secured by threaded member **54, 56** within the container **30**. As will be understood, this will serve to cover the live portions of the primary circuit, preventing accidental contact therewith and also, making it more difficult for unauthorized persons to tamper with these connections. The divider **36** is provided with a raised portion **66** which has an opening **68** cooperating with the cover **70** to secure cover **70** to the container **30** and seal it thereto with a utility seal.

A cover member **70** is provided which fits on the fuse container **30**. The cover member **70** is also made from insulating material, preferably the same material as container **30**. It is also preferred that the cover **70** be transparent. In the preferred form shown, the cover member **70** is provided with a pair of downward depending tabs **72, 74** which will fit on opposite sides of the divider **36**. The cover **70** is also provided with a pair of downward depending fuse brackets **76, 78** which will receive a pair of cartridge fuses shown at **80, 82**. Tabs **72, 74** and brackets **76, 78** are molded as part of cover **70**. A fuse retainer **84**, only one of which is shown, may be provided which will fit about the fuse body near the end cap of the cartridge fuse. The retainer **84** will fit on the fuse body between an end cap and the fuse bracket to prevent shifting of the fuse. This will ensure that the end caps of the fuses are aligned with the fuse clips in the fuse container **30** when the cover member **70** is placed on container **30**.

A slot **86** is provided in fuse cover **70** into which the raised member **66** on fuse container **30** is inserted. A sealing slot **88** is provided at right angles to slot **86** and will cooperate with slot **68** when the cover **70** is in place on fuse container **30**. As will be understood, the usual utility sealing wire may be inserted through mating slots **68, 88** to seal the cover **70** to fuse holder **30**. A handle member **90** is also provided on the cover **70** to make it easier to insert and remove cover **70** from the container **30**.

As will be apparent from the above descritpion, this invention provides a removable fuse holder which may be mounted on the primary terminals of an instrument transformer to convert an unfused instrument transformer to a fused instrument transformer. In the preferred embodiment disclosed, the fuses are mounted on the cover and thus, the holder cannot be opened without removing the fuses. Thus, the primary connections which are made inside of the fuse container cannot be made or disconnected without removing the fuses. While there has been shown and described the present preferred embodiment, it will be obvious to those skilled in this art that various

changes may be made without departing from the spirit and scope of the invention, especially as it is defined in the appended claims.

What is claimed as new and is desired to be secured by Letters Patent of the United States is:

1. A removable fuse holder for an instrument transformer comprising:
- (a) at least one terminal for said transformer,
- (b) a fuse container having at least one compartment,
- (c) said container having at least one opening,
- (d) said terminal extending through said opening,
- (e) a pair of fuse clips secured in said compartment,
  - (1) one of said pair of fuse clips having a bar connected thereto, said bar being removably secured to said terminal of said instrument transformer,
  - (2) the other of said pair of fuse clips having a terminal member connected thereto, said terminal member adapted to make connection with a conductor,
- (f) a cover member fitting on said fuse holder,
  - (1) said cover member having at least one fuse bracket adapted to contain a fuse for engaging said fuse clips.

2. A removable fuse holder as claimed in claim **1** in which a fuse retainer is provided to secure a fuse in said fuse bracket.

3. A removable fuse holder as claimed in claim **1** in which cooperating means are provided on said fuse container and said cover to receive a utility sealing means.

4. A removable fuse holder for an instrument transformer comprising:
- (a) a pair of primary terminals for said transformer,
- (b) a fuse container having two separate compartments,
- (c) a pair of fuse clips mounted in each of said compartments,
  - (1) one fuse clip of each pair having a conductor member secured thereto and connected to said primary terminal of said instrument transformer,
  - (2) the other fuse clip in each pair having a terminal member secured thereto and connected with a primary conductor,
- (d) openings provided in said container at each fuse clip to receive primary terminals and primary conductors such that said connections are made within said container,
- (e) and a cover member fitting on said container,
  - (1) said cover member having a pair of fuse brackets, each bracket adapted to contain a fuse to engage the fuse clips in one of said compartments.

5. A removable fuse holder as claimed in claim **4** in which fuse retainer means are provided, said retainer means cooperating with said fuse brackets to secure a fuse in said fuse bracket.

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