Jan. 31, 1967 R. L. DAVIS, JR 3,301,987

SHORTING DEVICE FOR SECONDARY TERMINALS OF CURRENT TRANSFORMERS

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Fig. 1.

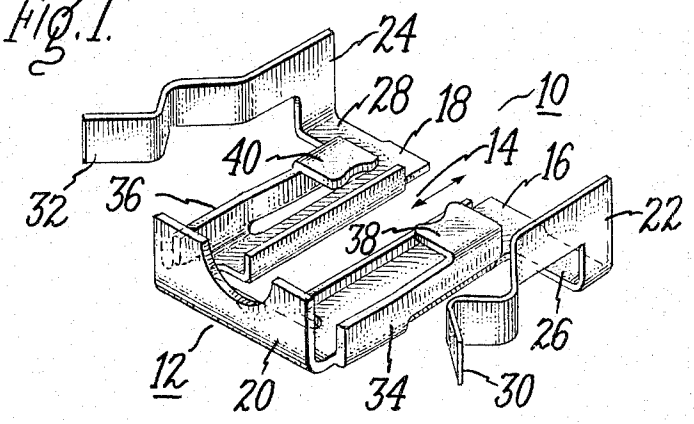
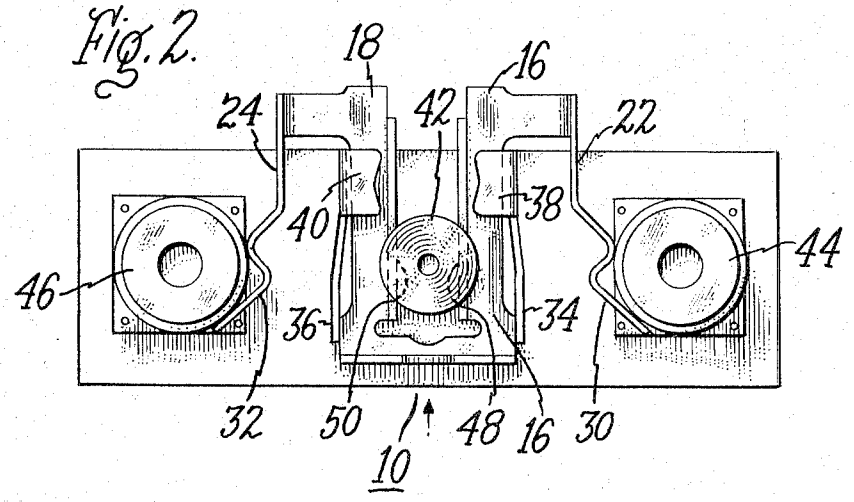


Fig. 2.



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Fig. 3.

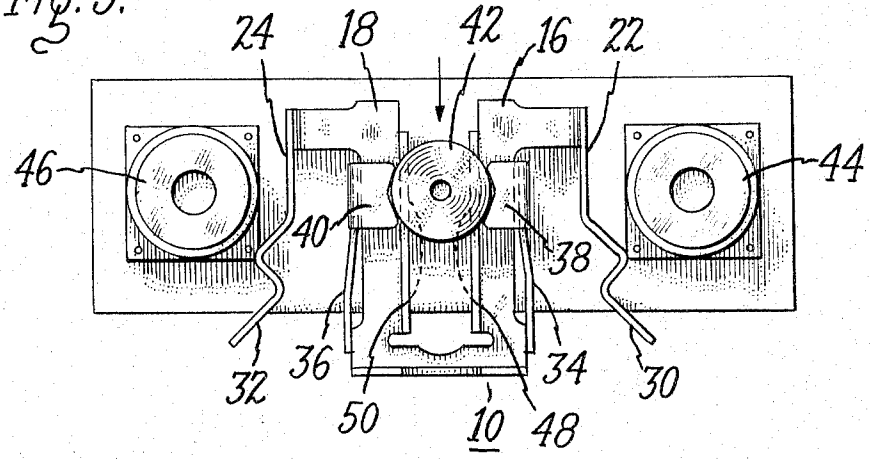
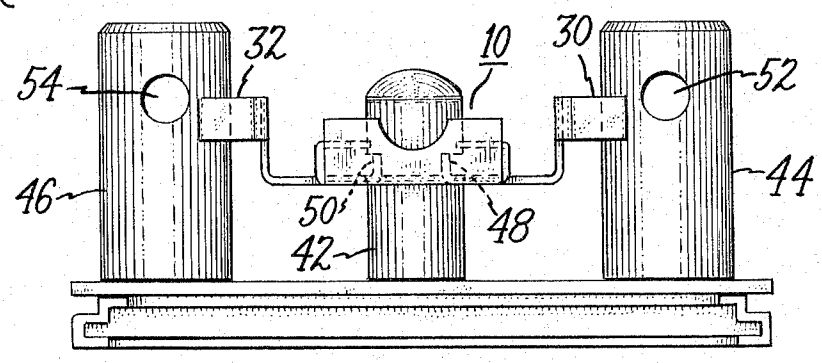


Fig. 4.



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SHORTING DEVICE FOR SECONDARY TERMINALS OF CURRENT TRANSFORMERS

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3 Claims. (Cl. 200—166)

This invention relates to shorting devices and more particularly to a shorting device for secondary terminals of current transformers.

In the transformer art and in particular in the field of instrument current transformers, dangerous electrical potentials may be developed across the secondaries of such transformers, when energized, if no load is connected to the secondary circuit. For this reason it is normal practice to provide some type of shorting device to short circuit the secondary terminals when the secondary circuit is disconnected.

Many types of shorting devices have been proposed. Most of the present day shorting devices require some type of rotating member which may be rotated between a shorting position and an open position with respect to secondary terminals. While these prior art devices generally perform their desired function they are essentially a complicated mechanical device and are generally too costly for the type of equipment on which they are used. There has long been a need in this field for a shorting device of a very simple and inexpensive construction. However, such shorting device must necessarily provide a positive shorting position between the terminals and must be readily moved and maintained in a non-shorting position.

Therefore it is one object of this invention to provide a simple, inexpensive shorting device.

A further object of this invention is to provide a one piece shorting device which may be readily moved in a linear direction from a shorting to an open position.

A still further object of this invention is to provide a one piece, inexpensive shorting device of resilient conducting material, whose resiliency will maintain the device in a shorted or open position.

In carrying out this invention in one form a one-piece shorting device is provided made from resilient conducting material. The shorting device is provided with a central portion having a slotted opening therein for slidably engaging a member spaced between secondary terminals. Outwardly extending arm members are provided on each side of the central portion, the arm members adapted to engage secondary terminals in one position of the shorting device. In the preferred embodiment, inwardly turned spring arms are provided on the central portion and are adapted to engage the member between the secondary terminals when the shorting device is in a second position.

The invention which it is desired to protect will be clearly pointed out and distinctly claimed in the claims appended hereto. However, it is believed that this invention and the manner in which its objects and advantages are obtained, as well as other objects and advantages thereof, will be more clearly understood by reference to the following detailed description thereof particularly when considered in the light of the accompanying drawings, in which:

FIGURE 1 is a perspective view of a one piece shorting device according to the preferred embodiment of this invention;

FIGURE 2 is a top view of the shorting device of FIG. 1 showing such device in shorted position between a pair of secondary terminals;

FIGURE 3 is a top view similar to FIG. 2 showing the shorting device in open position; and

FIGURE 4 is a front view of the shorting device of FIG. 1 as applied between secondary terminals.

Reference will now be made to the drawings in which like numerals are used to indicate like parts throughout the various views thereof for a more complete understanding of a preferred embodiment of the shorting device of this invention. Referring first to FIG. 1, there is shown a perspective view of a shorting device **10** made of a single piece of resilient conducting material, such as for example copper. The shorting device **10** includes a central body portion **12** having a longitudinal slot **14** extending substantially the length thereof. A pair of side members **16** and **18** are provided forming the edges of slot **14**. An upturned rear flange **20** is provided substantially connecting side members **16** and **18** and lending resilient strength to body portion **12**. A pair of shorting arms **22**, **24** are provided connected to the forward portions of sides **16** and **18** by the integral tabs **26** and **28**, respectively, as shown. The arms **22**, **24** extend outwardly from each side of the central portion **12** and are provided with bent portions **30**, **32** which are adapted to engage secondary terminals of a transformer as will more fully appear hereafter.

Also formed on the central body portion **12** are a pair of arm members **34**, **36** having inwardly turned tabs **38**, **40** as shown. Each of tabs **38** and **40** has an arcuately shaped end as is clearly evident from FIG. 1. The arms **34** and **36** are integrally connected to the rear portion of sides **16** and **18** in the manner shown and are adapted to engage a spaced member between secondary terminals as is more clearly apparent from FIGS. 2 through 4.

Referring now to FIG. 2 of the drawings, the shorting device **10** is shown as mounted on a spaced member **42** which is spaced between secondary terminals **44** and **46** of a transformer. The spaced member **42** is provided with slots on the side thereof as is indicated at **48** and **50**. Side members **16** and **18** engage the respective slots thereby slidably mounting shorting device **10** on spaced member **42**. In the position shown in FIG. 2, the shorting device is slid into shorting position and bent members **30**, **32** of shorting arms **22**, **24** engage the secondary terminals **44**, **46** thereby shorting the secondary terminals and resiliently holding the shorting device in this shorted position.

FIGURE 3 shows shorting device **10** slid to the second position in which tabs **38**, **40** engage the spaced member **42** and shorting arms **22**, **24** have moved to the non-shorting or open position. As will be clearly evident from FIG. 3, the tabs **38**, **40** on arms **34**, **36**, respectively, engage the spaced member **42** and resiliently hold shorting device **10** in the open position.

FIGURE 4 of the drawings shows one method of mounting shorting device **10** on the spaced member **42** between the terminals **44** and **46**. Slotted portions **48**, **50** on space member **42** are apparent in FIG. 4, slidably mounting the shorting device **10** on spaced member **42**. Of course, as will be understood in many types of instrument transformers the space member **42** will be made of insulating material. However, if desired, as will be apparent, the spaced member **42** could be a third terminal denoting a tap on the secondary of the transformer. Obviously, were spaced member **42** a third secondary terminal, shorting device **10** when in the position shown in FIG. 2 would provide a shorting position between all of the secondary terminals. It will be clear to those skilled in the art that terminals **44** and **46** must have at least a portion thereof of conducting material so that the shorting device when in the position shown in FIG. 2 will provide a short circuit between terminals **44** and **46**. In the preferred embodiment, the terminals **44** and **46** are in the form of brass studs having openings **52**

and 54, as shown in FIG. 4, for reception of secondary leads.

The shorting device of this invention is particularly useful with the terminal enclosure described and claimed in application Serial No. 484,015 filed concurrently herewith in the name of Franklin R. D'Entremont and assigned to the same assignee as this application. When used with the terminal enclosure of that application, the terminal enclosure may be provided with tabs which will engage the shorting device 10 moving such device to a shorted position when the terminal enclosure is placed on the secondary terminals in a position which does not allow access to the secondary terminals. When the enclosure is placed on the secondary terminals to allow leads to extend therefrom, the enclosure may not be fully closed and sealed unless the shorting device is in the open circuit position shown in FIG. 3.

While there has been shown and described the present preferred embodiment of this invention, it will be obvious to those skilled in the art that various changes may be made in constructional details without departing from the spirit and scope of the invention as defined in the appended claims.

What is claimed as new and which it is desired to secure by Letters Patent of the United States is:

1. A one-piece shorting device for the secondary terminals of a current transformer having a member spaced between the secondary terminals, said shorting device made from resilient conducting material comprising, a central portion formed of a pair of side members, a slotted opening in said central portion between said side members, said side members adapted to slidably engage the spaced member between the secondary terminals, arms formed on said central portion and extending outwardly therefrom on each side thereof and having bent portion at the extremities thereof for engaging the secondary terminals when said central portion is in one position on the spaced member, said central portion being slidable on the spaced member to a second position in which said arms will be disengaged from the secondary terminals.

2. A one-piece shorting device formed from resilient conducting material comprising a central portion, a slotted opening in said central portion formed by side members which are adapted to slidably engage a spaced member between secondary terminals, arms formed on said central portion and extending outwardly therefrom on each side thereof for engaging secondary terminals when said central portion is in one position, said central portion being movable to a second position in which said arms are adapted to be disengaged from secondary terminals, and a pair of inwardly turned arms on said central portion, said pair of inwardly turned arms adapted to engage the spaced member when said central portion is in said second position.

3. A one-piece shorting device formed from resilient conducting material comprising a body portion, said body portion having a pair of side members forming therebetween a slotted opening, a pair of shorting arms, each arm integrally connected to one of said side members and extending outwardly therefrom, said shorting arms being provided with bent portions at the extremities thereof, a second pair of arms integrally connected to said side members and having tab portions at the extremities thereof inwardly extending over said side members.

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