

March 15, 1960

J. C. BRETH ET AL

2,929,037

CURRENT TRANSFORMER ASSEMBLY

Filed March 5, 1956

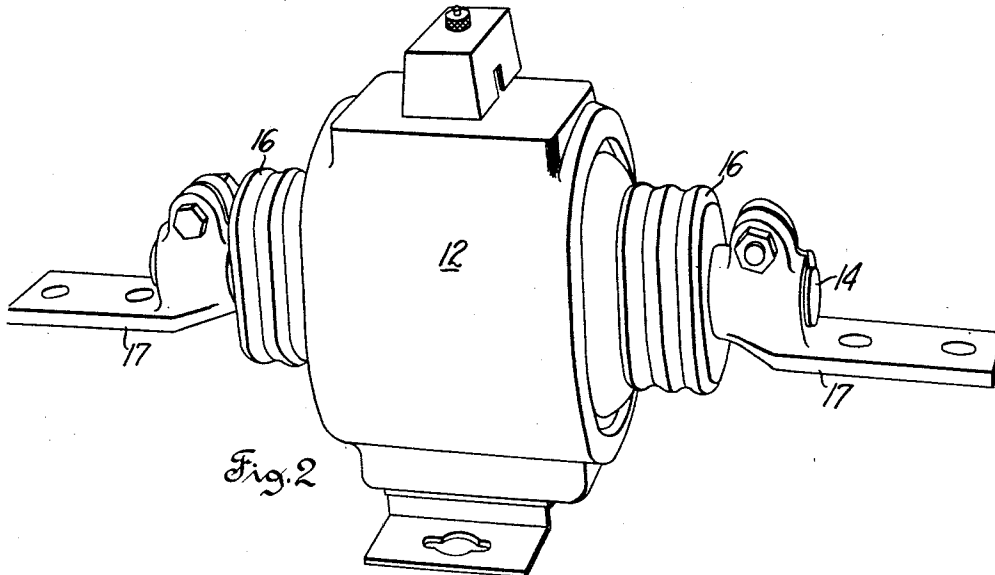


Fig. 2

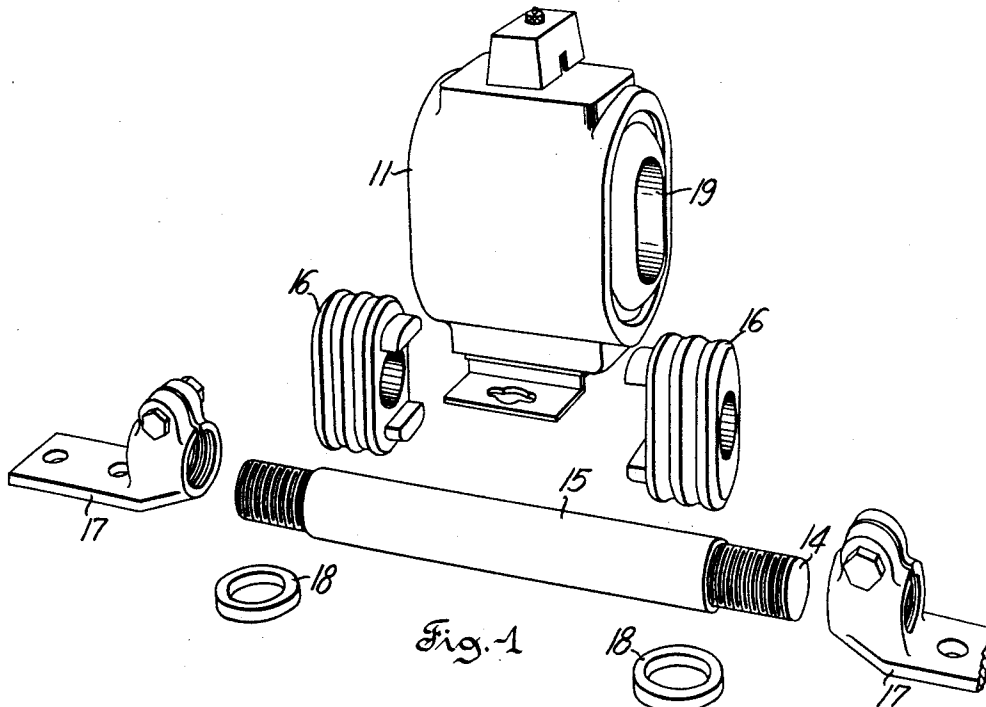


Fig. 1

Inventors
James L. Breth
George Sallouros
by *Richard C. Cummins*
Attorneys

1

2,929,037

CURRENT TRANSFORMER ASSEMBLY

James C. Breth, Pittsburgh, and George Gallousis, Carnegie, Pa., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Application March 5, 1956, Serial No. 569,381

2 Claims. (Cl. 336-174)

This invention relates in general to current transformers and in particular to an improved assembly for converting a through type current transformer of one voltage rating to a bar type current transformer of a relatively higher voltage rating.

It is well known that the basic function of any current transformer is to transform relatively large currents proportionately into smaller currents usually for the purpose of obtaining a measurement of the current. In such applications care must be exercised that the insulation of the transformer is sufficient to withstand the voltage difference between the primary conductor through which the current is flowing and the secondary of the current transformer which is usually at ground potential. Thus in the selection of a current transformer for a particular application, consideration must be given to both the value of current to be transformed and the voltage at which the transformation takes place.

In the past, current transformers have been limited to only one specific voltage class so that for a particular electrical installation having apparatus operating at different voltages, it has been necessary to keep in stock a number of current transformers each of a different voltage rating in order to meet all possible measuring applications. This is a considerable disadvantage practically in that it requires an initial investment in a number of devices which, while being necessities, may only be used occasionally.

According to the present invention, the number of transformers required to be kept on hand is reduced considerably by providing a current transformer assembly comprising a standard through type current transformer which is operable to transform currents at a predetermined voltage and means for converting the through type current transformer to a bar type current transformer operable to transform currents at relatively higher voltages. The number of current transformers required for any particular electrical installation may therefore be considerably reduced.

It is therefore an object of the present invention to provide an improved current transformer assembly capable of selectively transforming currents at two different operating voltages.

Another object of the present invention is to reduce the number of current transformers required to be kept in stock for transforming currents at different voltages.

Objects and advantages other than those mentioned above will be apparent from the following description when read in connection with the drawing in which:

Fig. 1 is a perspective view of the improved current transformer arrangement prior to assembly; and

Fig. 2 is an isometric view of the arrangement shown in Fig. 1 after assembly.

Referring to the drawing and particularly to Fig. 1, the current transformer assembly shown therein comprises a standard through type current transformer 11 which is operable up to a predetermined voltage, for example 600 volts for transforming currents in a manner that is well known in the art.

2

In order to increase the usefulness of the through type current transformer 11, there is provided what may be referred to as a "Do It Yourself" conversion kit 13. The conversion kit as shown comprises a copper rod 14, suitable insulation 15, a pair of primary bushings 16, a pair of conductor connectors 17 and a pair of gaskets 18. As shown, insulation 15 is preferably molded on the copper rod 14 and the bushings 16 are separate from the rod. However, if desired, one bushing 16 may be integral with rod 14 and insulation 15. The bushings are designed to provide adequate insulation to prevent a voltage breakdown between the rod 14 and transformer 11.

If a particular application requires the transformation of currents at relatively low voltage, for example below 600 volts, the through type current transformer 11 shown in Fig. 1 may be used independently of the other members of the assembly. However, if the application requires transformation of currents at relatively high voltages, for example, 5000 volts, the through type current transformer 11 of Fig. 1 is simply and easily converted to a 5000 volt bar type current transformer 12 as shown in Fig. 2.

In converting transformer 11 shown in Fig. 1 to the bar type transformer shown in Fig. 2, the copper rod 14 is inserted through the passage 19 in transformer 11, suitable insulation 15 being provided between rod 14 and the wall of the passage. The bushings 16 are slid over each end of the rod 14 and are disposed in passage 19 thereby maintaining the rod 14 in position in the passage 19. The gaskets 18 are placed on the rod 14 and means such as connectors 17 are fixed to the rod 14 for attaching the conductor carrying the current to be transformed.

Such an arrangement allows a relatively inexpensive 600 volt current transformer to be converted quickly and simply into a 5000 volt bar type current transformer.

While only one embodiment of the present invention has been illustrated and described it will be apparent to those skilled in the art that modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. A high voltage bar type current transformer comprising in combination: a relatively lower voltage through type current transformer defining a passage; first and second spaced insulating bushings removably mounted at opposite ends of said passage, each said bushing defining an aperture, each said bushing further having an end portion extending into said passage for alignment therewith and a flange in abutment with an exterior surface of said through type current transformer for limiting the extension of said end portion into said passage; an elongated insulated conductive member removably disposed in said passage and through each said aperture; and means removably mounted on the ends of said elongated member for maintaining said member and bushings in a fixed relation with said through type current transformer and for connecting a current carrying conductor in series with said member.

2. A high voltage bar type current transformer comprising in combination: a relatively lower voltage through type current transformer defining a passage; first and second spaced insulating bushings removably mounted at opposite ends of said passage, each said bushing defining an aperture, each said bushing further having an end portion extending into said passage for alignment therewith and a flange in abutment with an exterior surface of said through type current transformer for limiting the extension of said end portion into said passage; an elongated conductive member removably disposed in said passage and through each said aperture; removable insulation lining said passage; and means removably mounted

on the ends of said elongated member for maintaining said member and bushings in a fixed relation with said through type current transformer and for connecting a current carrying conductor in series with said member.

References Cited in the file of this patent

UNITED STATES PATENTS

826,283	Schmidt	July 17, 1906
2,436,636	D'Entremont	Feb. 24, 1948

FOREIGN PATENTS

614,865 Germany June 20, 1935

OTHER REFERENCES

5 German publication: "Helios, Export Zeitschrift für Elektrotechnik," pp. 730-731, July 27, 1926.