Nov. 3, 1931. H. E. HARRIS 1,830,541

INSTRUMENT TRANSFORMER

Filed June 20, 1930

Fig. 1.

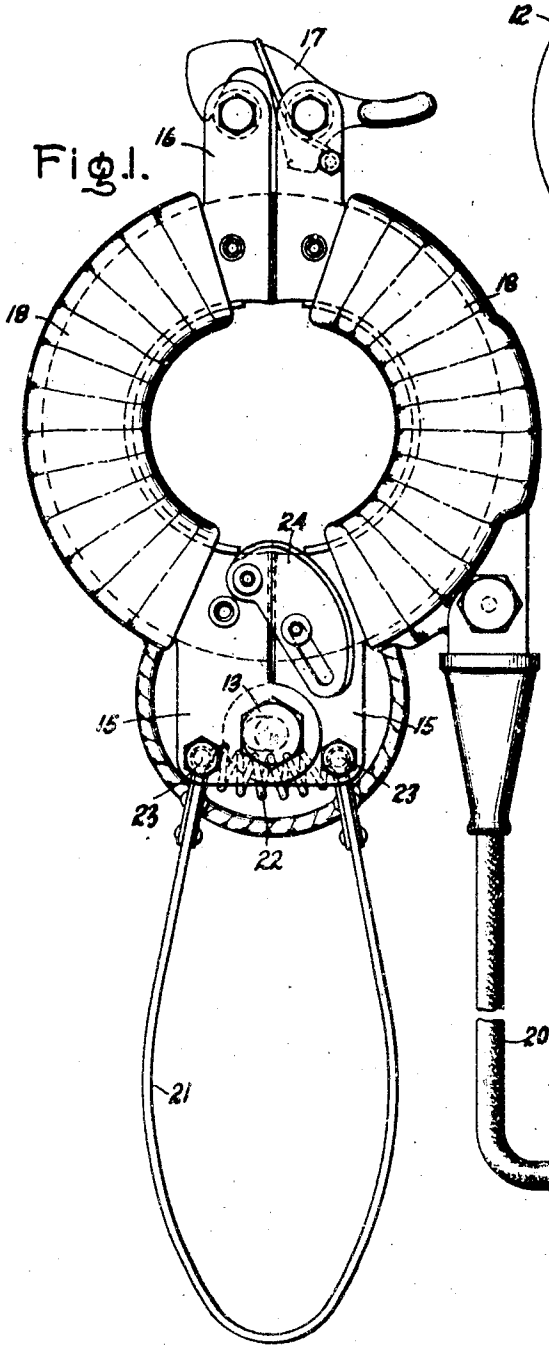


Fig. 2.

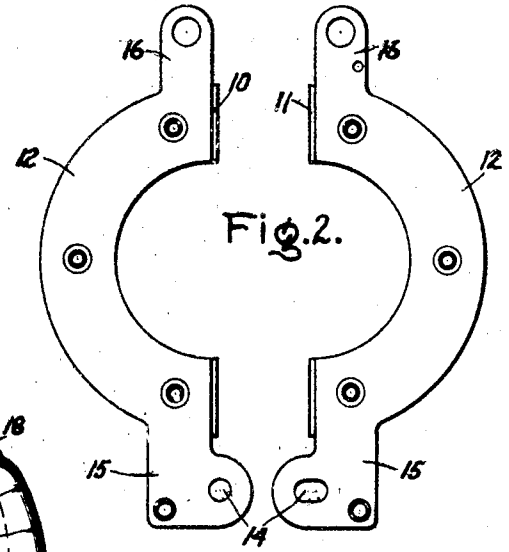
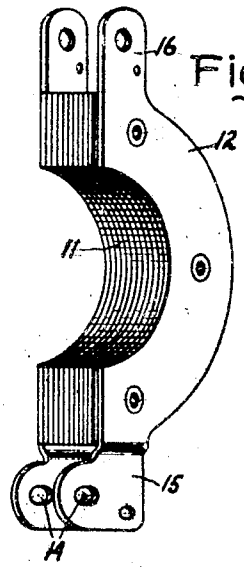


Fig. 3.



Inventor:
Hiram E. Harris,
by Charles O'Mullan
His Attorney.

Patented Nov. 3, 1931 1,830,541

UNITED STATES PATENT OFFICE

HIRAM E. HARRIS, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

INSTRUMENT TRANSFORMER

Application filed June 20, 1930. Serial No. 462,681.

My invention relates to instrument transformers of the type in which a winding is mounted on a core which is separable to permit it to be opened and placed around a current carrying conductor. Such a transformer may be used for a variety of purposes but is commonly used in connection with an ammeter for measuring the current in the conductor which it surrounds. It is desirable that the contacting surfaces of the two-part core fit together accurately so that the reluctance of the flux path through the core may be low and it is the general object of the invention to provide an improved support for the two core parts so arranged that the contacting surfaces of the core parts may fit accurately when brought together.

The invention will be better understood from the following description taken in connection with the accompanying drawings in which Fig. 1 is a view of an instrument transformer constructed in accordance with the invention; Fig. 2 is a view of the two parts of the core shown in Fig. 1, and Fig. 3 is a perspective view of one of the core parts.

Like reference characters indicate similar parts in the different figures of the drawings.

The transformer which is shown in the drawings as illustrative of the invention includes a ring shaped magnetic core divided into two separable parts 10 and 11 by two joints at opposite sides of the core. The contacting surfaces at these joints preferably lie in a single plane passing through the axis of the core and the surfaces at each joint are finished to fit together accurately. Each of the core parts 10 and 11 is formed of a stack of magnetic laminations secured between a pair of supporting end plates 12 by rivets. The two core parts 10 and 11 are pivoted together near one of their joints by a bolt 13 extending through openings 14 in extensions 15 formed integrally with the end plates 12. The other ends of the end plates 12 are also provided with integral extensions 16 and a latch 17 to hold the core parts closed together about a current carrying conductor. A secondary winding 18 is formed in two sections which surround the two core parts 10 and 11 respectively and is connected to terminals 19 by a flexible two conductor cord 20. A strap 21 is attached to the extensions 15 of the end plates 12 for convenience in carrying the transformer.

A low reluctance path for the magnetic flux in the core is desirable and this makes it important that the contacting surfaces at each core joint be accurately fitted and that they be pressed tightly together when the core is held closed by the latch 17. The openings 14 in at least one pair of the extensions 15 of the end plates 12 are enlarged or elongated so as to fit loosely on the pivot bolt 13 and thus the two core parts 10 and 11 are pivoted loosely together. The loose fit in this pivotal connection assures that both core joints may be closed tightly. The latch 17 holds the core joint nearest this latch tightly closed. The other core joint is held tightly closed by a tension spring 22 connected by bolts 23 between the extensions 15 of the end plates 12 of the two core parts. A stop 24 pivoted to one core part and having a slot engaging a pin on the other core part may be provided to limit the extent to which the core may be opened.

The invention provides an instrument transformer with a core having two separable pivotally connected parts which may be held tightly together without the necessity for accurate workmanship in the pivotal joint. There is also the advantage that any wear in the pivotal connection between the core parts cannot affect the closing of the core and the tightness of its joints when closed.

The invention has been explained by describing and illustrating a particular form thereof but it will be obvious that changes may be made without departing from the spirit of the invention or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An instrument transformer including a separable two part core with two joints, the two parts of the core being loosely pivoted together near one of said joints, and means for tightly closing the joint nearest said pivotal connection when the other joint is closed.

2. An instrument transformer including a separable two part core with two joints, the two parts of the core being loosely pivoted together near one of said joints, and a tension spring connected between the ends of said core parts nearest said pivotal connection to close the adjacent joint tightly when the other joint is closed.

3. An instrument transformer including a ring shaped core divided into two separable parts by two joints, said two parts of the core being loosely pivoted together near one of said joints, a tension spring connected between the ends of said core parts nearest said pivotal connection to close the adjacent joint tightly when the other joint is closed, and means for holding said other joint tightly closed.

In witness whereof, I have hereunto set my hand this seventeenth day of June, 1930.

HIRAM E. HARRIS.