Feb. 17, 1970 A. JOHANNSEN ET AL 3,496,505

TRANSFORMER BOBBINS WITH MEANS FOR MOUNTING TERMINALS THEREON

Filed July 6, 1967 2 Sheets-Sheet 1

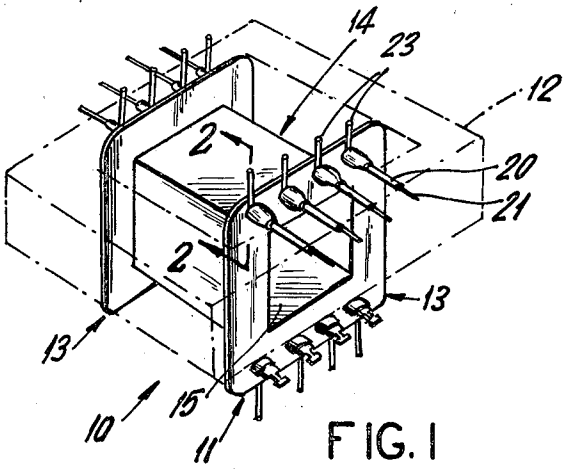


FIG. 1

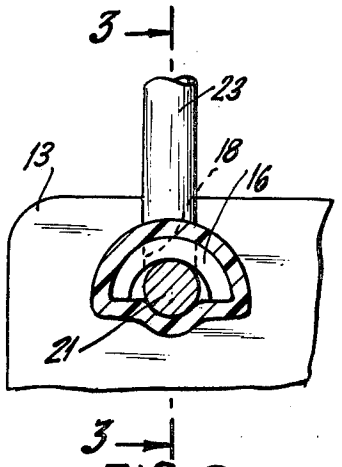


FIG. 2

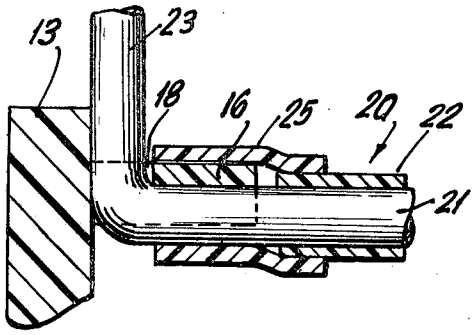


FIG. 3

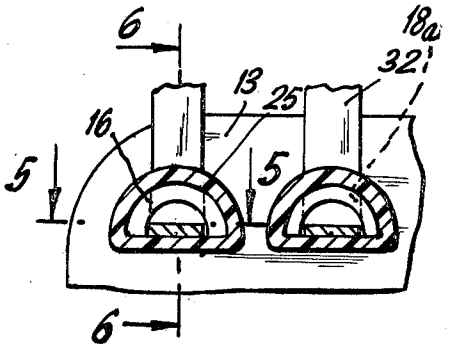


FIG. 4

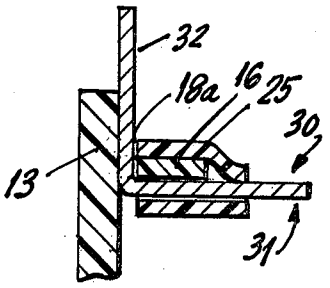


FIG. 6

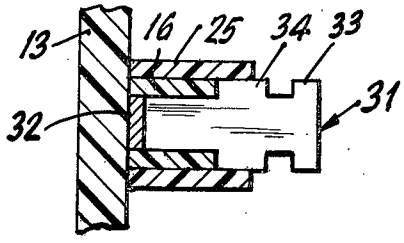


FIG. 5

INVENTORS
ARTHUR JOHANNSEN
WALTER PEDERSEN

BY

J. B. Felshin

ATTORNEY

Feb. 17, 1970 A. JOHANNSEN ET AL 3,496,505
TRANSFORMER BOBBINS WITH MEANS FOR MOUNTING TERMINALS THEREON
Filed July 6, 1967 2 Sheets-Sheet 2

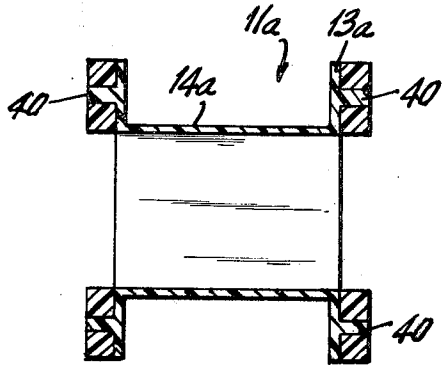


FIG. 8

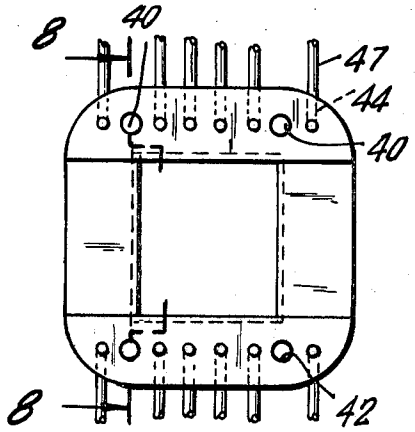


FIG. 7

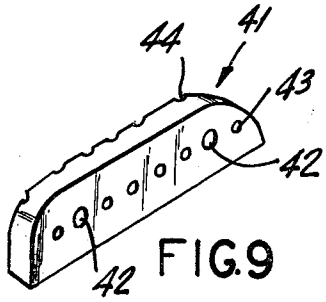


FIG. 9

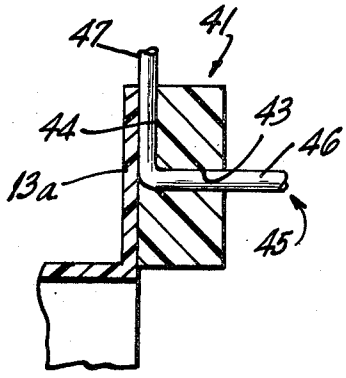


FIG. 10

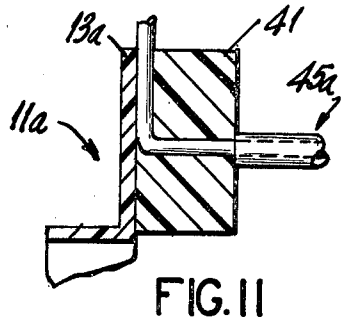


FIG. 11

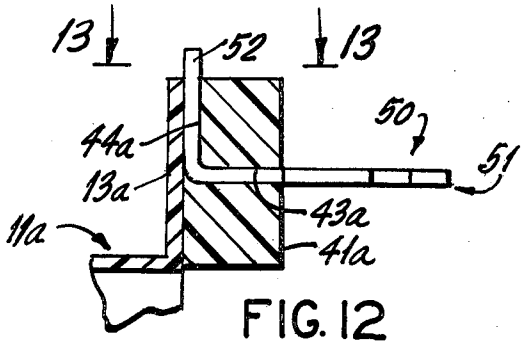


FIG. 12

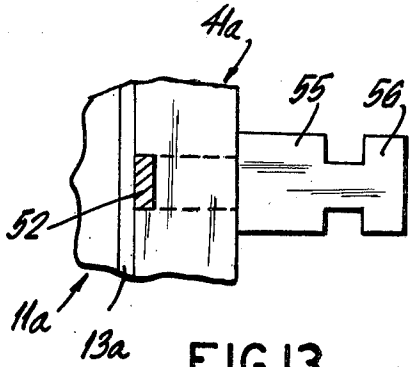


FIG. 13

INVENTORS
ARTHUR JOHANNSEN
WALTER PEDERSEN
BY
J. B. Feldblum
ATTORNEY

United States Patent Office 3,496,505 Patented Feb. 17, 1970

3,496,505

TRANSFORMER BOBBINS WITH MEANS FOR MOUNTING TERMINALS THEREON

Arthur Johannsen, 1681 65th St. 11204, and Walter Pedersen, 1928 E. 36th St. 11234, both of Brooklyn, N.Y.

Filed July 6, 1967, Ser. No. 651,595
Int. Cl. H01f 27/30
U.S. Cl. 336—208 2 Claims

ABSTRACT OF THE DISCLOSURE

Terminal lugs, bus wires, lead wires or printed circuit terminals are attached to a bobbin by means of members made of non-conducting material, mounted on the bobbin and having means to receive portions of said lugs or wires or terminals therethrough. Said terminals or wires in each case include portions at right angles to one another, and each comprises a free terminal end to which wire ends of coils on the bobbin may be attached in conductive contact therewith. In one form the members of non-conductive material comprise bars formed with holes force fitted on locating pins extending from the bobbin. In another form, said non-conducting members comprise sleeves of heat shrinkable material surrounding extensions on the bobbin through which portions of the terminals or wires or lugs extend. These sleeves are heated to shrink and fix the terminals to said extensions.

BRIEF SUMMARY OF THE INVENTION

This invention relates to transformer bobbins. It is particularly directed to bobbins provided with a plurality of terminals for attachment to wires or other conductors.

An object of this invention is to provide a bobbin of the character described having improved means for attaching terminals thereto and comprising non-conductive means attached to said bobbin.

Another object of this invention is to provide a bobbin of the character described provided with connected passages at right angles to one another receiving portions of connected conductors at right angles to one another, with portions of said conductors projecting from the bobbin, said bobbin comprising attached together parts to facilitate assembly of said conductors with said bobbin.

Yet another object of this invention is to provide a strong and durable bobbin of the character described which shall be relatively inexpensive to manufacture, easy to assemble and which shall yet be practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of invention will be indicated in the following claims.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

In the accompanying drawing, in which are shown various illustrative embodiments of this invention,

FIG. 1 is a perspective view of a bobbin embodying the invention, with transformer parts shown in dot-dash lines;

FIG. 2 is a cross-sectional view taken on line **2—2** of FIG. 1;

FIG. 3 is a cross-sectional view taken on line **3—3** of FIG. 2;

FIG. 4 is a cross-sectional view similar to FIG. 2 but illustrating a modification;

FIG. 5 is a cross-sectional view taken on line **5—5** of FIG. 4;

FIG. 6 is a cross-sectional view taken on line **6—6** of FIG. 4;

FIG. 7 is an end view of a bobbin embodying a modified form of the invention;

FIG. 8 is a cross-sectional view taken on line **8—8** of FIG. 7;

FIG. 9 is a perspective view of one of the plastic bars;

FIG. 10 is a cross-sectional view taken on line **10—10** of FIG. 7;

FIG. 11 is a view similar to FIG. 10 but illustrating another modification;

FIG. 12 is a view similar to FIG. 11 but illustrating a further modification; and

FIG. 13 is a cross-sectional view taken on line **13—13** of FIG. 12.

DETAILED DESCRIPTION OF THE INVENTION

Referring now in detail to the drawing, **10** designates a transformer comprising a bobbin **11** on which is mounted a usual core **12**. The bobbin **11** comprises end flanges **13** interconnected by a tubular portion **14** of rectangular cross-section and forming a through opening **15** through which a portion of the core passes. The coils of the transformer surround portion **14** and are located between flanges **13**. The flanges **13** extend outwardly from the ends of the tubular portion **14**. The ends of the coils on the tubular portion **14**, must be attached to terminals connected to wires or other conductors. The present invention concerns the mounting of the terminals or other conductors on the end faces **13** of the bobbin.

In FIGS. 1–6, each of the flanges **13** are formed top and bottom with integral outwardly projecting parallel extensions **16** of semi-cylindrical cross-section. The top flanges **16** are concave at their undersides and the bottom extensions **16** are concave at their upper sides. Each of the extensions **16** is formed with a vertical through opening **18** adjacent a face flange **13**.

In FIGS. 1 and 2 there is illustrated the attachment of a conductor which comprises an insulated wire **20** to the bobbin. The wire **20** comprises an elongated wire portion **21**. It may be surrounded by insulation **22**. The outer end of the wire is bared of insulation and a portion thereof is bent at right angles to form a terminal **23**. The terminal **23** is slidably moved through the opening **18** in the extension **16** so that part of the wire **21** adjacent the terminal, is received in the semi-cylindrical cavity in said extension. A tube **25** of heat shrinkable plastic material is threaded onto the insulated wire **20** and then moved into surrounding position relative to the semi-cylindrical extension **16** and said adjacent portion of the wire **21**. The tubes **25** are then heated to shrink and hence attach the wire to the bobbin.

In FIG. 4 the construction of the bobbin flanges **13** and the extensions **16** is the same as in FIGS. 1, 2 and 3, however, in FIGS. 4, 5 and 6 the lugs **30** are attached to the bobbin face **13**. The lug **30** has a horizontal portion **31** and a vertical terminal portion **32**. The extension **16** is formed with a wider opening **18***a* instead of the opening **18**, to permit passage therethrough of the flat lug portion **32**. The lug **30** is made of flat metal. The horizontal portion **31** has wings **33** and **34**, as shown in FIG. 5. The sleeve **25** is also threaded onto the lug and extension and then heated to shrink and to held the lug tightly against the extension **16**. Instead of using an insulated wire **20**, a wire without insulation may also be used.

In FIGS. 7, 8, 9 and 10 there is shown a bobbin **11***a* similar to the bobbin **11** except that its end flanges **13***a* are each formed at top and bottom with a pair of out-

wardly extending locating pins **40**. On each pair of locating pins **40** there is force fitted a bar or block **41** made of plastic or other non-conducting material and formed with openings **42** to receive the locating pins **40**. Each bar **41** is formed with a plurality of horizontal through openings **43** and with vertical grooves **44** at the surface thereof, facing the flanges **13***a* and extending to said openings **42**. As shown in FIG. 10, wires **45** each has a horizontal portion **46** passing through the horizontal through opening **43** and a vertical terminal portion **47** passing through the groove **44** and extending beyond the bar. The terminal portions **47** are thus disposed between the bars **41** and the flanges **13***a* of the bobbin.

In FIG. 11 there is shown a construction in which the wire **45** is replaced by an insulated wire **45***a*. Otherwise the construction is the same as shown in FIGS. 7–10.

In FIGS. 12 and 13, each wire **45** is replaced by a lug **50**. Bars **41***a* replace the bar **41** and these have flat horizontal through openings **43***a* and flat rear grooves **44***a*. The lugs have horizontal flat portions **51** passing through the through openings **43***a* and outwardly extending terminal portions **52** received in the grooves **44***a* and extending beyond the flanges **13***a* of the bobbin. The lugs **50** are of usual construction and are provided with wings **55**, **56** as shown in FIG. 13.

It will now be understood that the ends of the coils mounted on the bobbin and between the end flanges **13** or **13***a*, may be attached to the terminals **23**, **32**, **47** or **52** in the usual manner.

It will thus be seen that there is provided an article in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings, is to be interpreted as illustrative and not in a limiting sense.

We claim:

1. In combination, a bobbin provided with end flanges interconnected by a tube, a conductor, a non-conducting means separate from the bobbin, means for attaching sand non-conducting means to said bobbin, and means on said non-conducting means to mount said conductor on said bobbin with a portion of said conductor projecting from said bobbin—said non-conducting means comprising a member having a through passage through which a portion of said conductor passes, said member comprising a bar of plastic material provided with openings, and said means to mount said non-conducting means on said bobbin comprising locating pins on said bobbin frictionally received in said openings in said bar.

2. The combination of claim **1**, said bar having a groove at a surface thereof contacting said bobbin, and a portion of said conductor passing through said groove.

References Cited

UNITED STATES PATENTS

1,704,151	3/1929	Simpson	336—192
1,984,036	12/1934	Schwartzmann	336—208
3,071,743	1/1963	La Patka	336—208 X
3,328,736	6/1967	Keck	336—192
3,359,395	12/1967	Bruce	336—208 X

FOREIGN PATENTS

1,100,973	4/1955	France.
1,270,650	7/1961	France.

OTHER REFERENCES

Alphlex Shrinkable Tubing Catalog ST–27, Alpha Wire Co., New York, 1961.

ELLIOT A. GOLDBERG, Primary Examiner

U.S. Cl. X.R.

242—118.4; 336—192