March 3, 1959 T. STILER 2,876,424

TRANSFORMER

Filed Sept. 6, 1955

Fig. 1

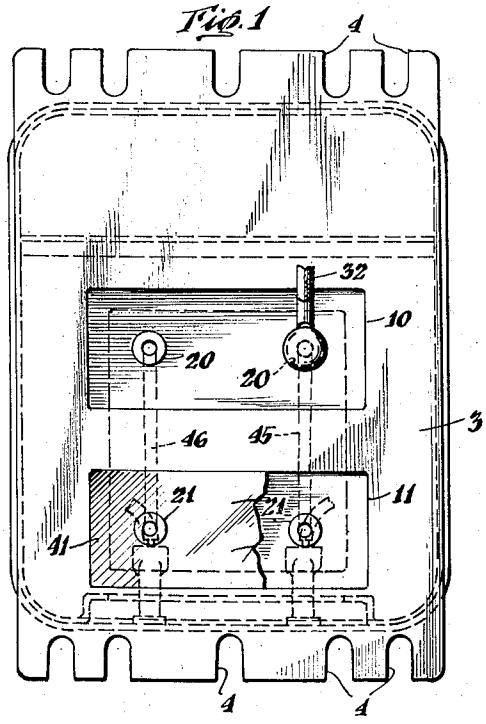
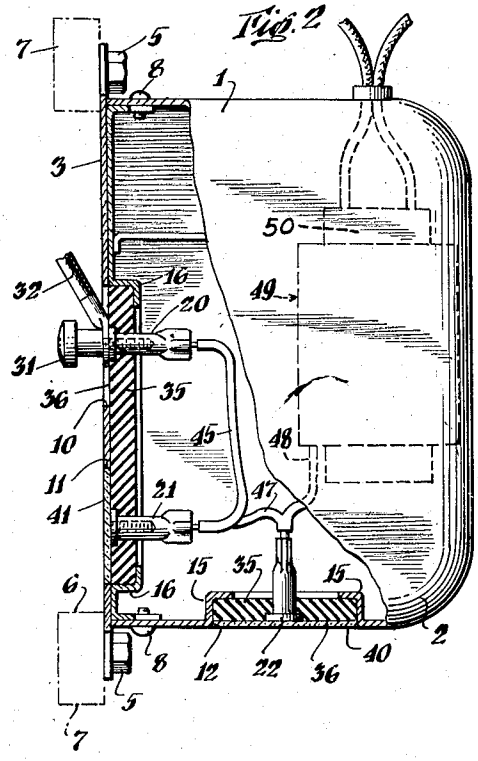


Fig. 2



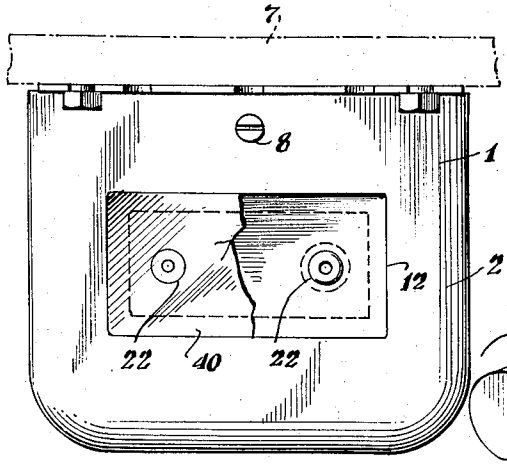
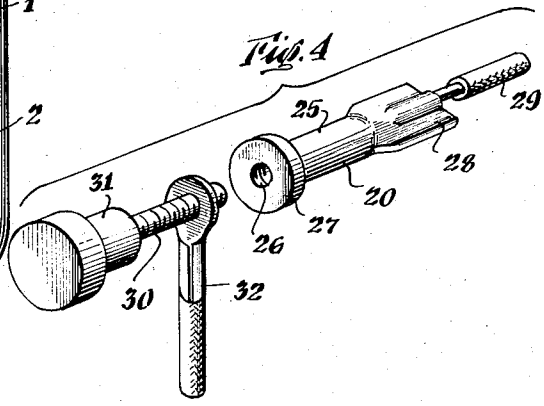


Fig. 3

Fig. 4



INVENTOR
Ted Stiler
BY Kane, Dalsimer and Kane
ATTORNEYS

United States Patent Office 2,876,424 Patented Mar. 3, 1959

2,876,424

TRANSFORMER

Ted Stiler, Brooklyn, N. Y.

Application September 6, 1955, Serial No. 532,546

2 Claims. (Cl. 336—192)

This invention relates to a type of transformer particularly adapted for use on furnaces and which is readily adaptable to various types of installations.

One of the objects of this invention is to provide a transformer having a series of pairs of outlet terminals positioned at different points on the transformer in such manner that a given pair may be selected for use for a particular installation, as is most convenient.

Another object of this invention is to provide such a structure which is well insulated, safe to use, and does not have the disadvantage of having the unused terminals exposed for possible accidental contact.

Another object of this invention is to provide such a transformer which is easily used and economical to manufacture.

Other and further objects of the invention will appear upon a reading of the below description and the appended drawings. These drawings are:

Fig. 1 is a front elevation, partially broken away, of the transformer, showing two pairs of available outlet terminals on the front surface.

Fig. 2 is a side elevation, partially broken away, of the transformer of this invention in installed position.

Fig. 3 is an end elevation, partially broken away, of the transformer of this invention in its installed position.

Fig. 4 is an exploded perspective showing details of the type of terminal preferably used in the invention.

In general, in the practice of this invention, a transformer is provided having a casing with a plurality of openings therein for output terminals. In each of these openings there is provided two outlet terminals connected to the secondary of the transformer. The terminals are mounted in position in the openings preferably by being set in a resinous material, and are so mounted that their outer ends are substantially flush with the outer surface of this resinous material. A removable insulated covering member is fixed in the opening over the resinous material to insulate those terminals not actually in use.

The transformer of this invention is generally represented by the numeral **1** in the drawings. This transformer is of the normal type, including a primary winding **50** and a secondary winding **49**. The transformer is located within a shell or casing **2** and has a mounting plate **3** secured on the front of the transformer with bolts **8**. This mounting plate **3** may have a plurality of holes or slots **4** at each end which may be used to secure the unit to the side of the burner casting. Ordinarily, the unit would be secured with bolts **5** to an opening **6** in the burner casting **7**.

One or more sides of the casing **2** and/or the plate **3** of the transformer **1** are provided with openings for outlet terminals. As disclosed in the drawings, openings **10** and **11** are shown inside of the cover plate **3**, and opening **12**, on one side of the shell **2**. In its preferred construction, flange structures **15** and **16** are formed inwardly about openings **10, 11** and **12**, as shown. These flange structures provide strength and support for the preferred arrangement of the outlet terminals.

Mounted in each of the openings is a pair of outlet terminals. Those terminals **20** are in opening **10**, terminals **21** in openings **11**, and terminals **22** in opening **12**. These terminals, as especially illustrated by the perspective view of terminal **20** in Fig. 4, preferably are made of a stud **25**, having internal threads **26** and a broadened mounting head **27**. The rear or inward portion of the terminals has contact element **28**, which is electrically connected to its respective lead. In Fig. 4 the lead is identified by the numeral **29**. The internal thread portion **26** of each of the terminals is adapted to receive the screw portion **30** of the terminal head **31**. Terminal head **31** may thus be used to secure an outside lead such as lead **32** in electrical contact with the particular terminal.

As above stated, each of the pairs of outlet terminals **20, 21** and **22** is positioned in its respective outlet opening. This is preferably accomplished by forming a resin **35** about these terminal members while the resin is in a hot, molten condition. This resin, which is ordinarily a bituminous resin, will be formed between flange structures **15** in opening **12** and **16** in openings **10** and **11**. The outer surface **36** of the resin **35** is preferably depressed below the outer surface of the casing **2** or the cover plate **3**, depending upon the positioning of the particular openings. Likewise, the outer surface of head **27** is preferably flush with the surface **36** of resin **35**.

As manufactured, each of the openings **10, 11** and **12** has a cover member fixed in position in the opening over the resin **35**. Thus, there is cover member **40** in opening **12** and cover member **41** in opening **11**. No cover member is shown in the drawings for opening **10** since this opening illustrates the use of one of the pairs of terminals after the cover member has been removed.

Cover members **40** and **41** should be made of a stiff insulating material such as one of the plastics, preferably Celluloid. Ordinarily, the cover member is of a shape to just fit within its respective opening and thus be frictionally held by the edge surfaces of their respective openings. Additionally, cover members **40** and **41** will have an adherence to the bituminous resin **35** and so will remain in place.

The terminal members **20, 21** and **22** are connected within the transformer structure in parallel. Thus, one side of the terminals **20** and **21** are connected with lead **45** and the other of these two pairs of terminals are connected with lead **46**. Likewise, one side of the terminals **21** and **22** are interconnected with lead **47**, which is connected to lead **48** attached to one output terminal of the secondary **49**. The other side of terminals **21** and **22** are interconnected in a comparable manner (not shown) to the other side of the transformer secondary.

When it is desired to use the transformer, the particular pair of output terminals which would be most convenient for the connection desired is selected. The cover member, such as one of members **11** or **12**, is removed by inserting the point of a knife between the edge of the cover member and the edge of the opening in which it is positioned. Opening **10** is shown with the cover removed. A pair of leads is then connected one to each of the outlet terminals and these leads lead to the burner or elsewhere, as may be desired. In the drawings, one lead **32** is shown connected with terminal head or connector **31** to one of output terminals **20**.

It is thus seen that by the use of this invention greater adaptability is given to transformers, particularly those used in furnace installation. In fact, if desired, more than one of the pairs of terminals may be used at a given time while unused terminals will remain completely insulated.

Various modifications of this invention may be made without departing from the spirit thereof.

I claim:

1. A transformer assembly for use in connection with electric furnaces including a voltage transformer having primary and secondary windings, a casing enclosing said transformer and to which said transformer is rigidly mounted, an opening formed in said casing, an input connection to the primary of said transformer which passes through the opening, a plurality of pairs of studs mounted upon said casing, each of the studs having an opening in the outer end thereof and each of said stud pairs having the stud outer ends lying in the plane of the casing, said casing being formed with openings which expose the openings in the studs, an electrically conductive wire connecting a stud of each of said pairs to one side of the secondary winding, a second electrically conductive wire connecting the remaining studs to the remaining side of the secondary winding, insulating means electrically isolating said stud pairs from said casing, a pair of connectors each having a portion thereof formed to be capable of being removably inserted in the opening in one of said studs whereby connections from said furnace to said connectors may be selectively attached to the secondary of said transformer by insertion of said connectors in a selected stud pair, insulating cover members attachable to said casing for enclosing the unused pairs of studs therein, and means attached to said casing for mounting the casing with the stud pair to be used in position with a portion of the casing surrounding said pair adjacent a portion of the furnace.

2. A transformer assembly for use in connection with electric furnaces including a voltage transformer having primary and secondary windings, a casing enclosing said transformer and to which the transformer is rigidly mounted, an input opening formed in said casing, an input connection passing through said opening and connected to the primary winding, inwardly extending flanges formed on said casing and defining a plurality of output openings, a plurality of insulating resin members within said casing and each disposed adjacent one of the output openings, a pair of studs embedded in each of said insulating members, each of said studs having an opening in the outer end thereof and each of said stud pairs having the stud outer ends lying in the plane of the casing, an electrically conductive wire connecting a stud of each of said pairs to one side of the secondary winding, a second electrically conductive wire connecting the remaining studs to the remaining side of the secondary winding, a pair of connectors each having a portion thereof formed so that it can be removably inserted in the opening in one of said studs whereby connections from said furnace to said connector may be selectively attached to said transformer by insertion of a pair of connectors in a selected pair of studs, insulating means covering each of the unused studs and means attached to said casing for mounting the assembly in position with the portion of the casing surrounding the studs which are used adjacent a portion of the furnace.

References Cited in the file of this patent

UNITED STATES PATENTS

1,568,584	Blankenship	Jan. 5, 1926
2,097,346	Russell	Oct. 26, 1937
2,126,174	Comstock	Aug. 9, 1938
2,148,449	Edwards	Feb. 28, 1939
2,196,842	Strazzabosco	Apr. 9, 1940
2,433,917	McCartney	Jan. 6, 1948
2,583,353	Bishofberger	Jan. 22, 1952
2,590,003	Gaston	Mar. 18, 1952