July 6, 1948. M. NATHANSON 2,444,522

BALLAST UNIT FOR FLUORESCENT LAMP LIGHTING APPARATUS

Filed June 15, 1946 2 Sheets-Sheet 1

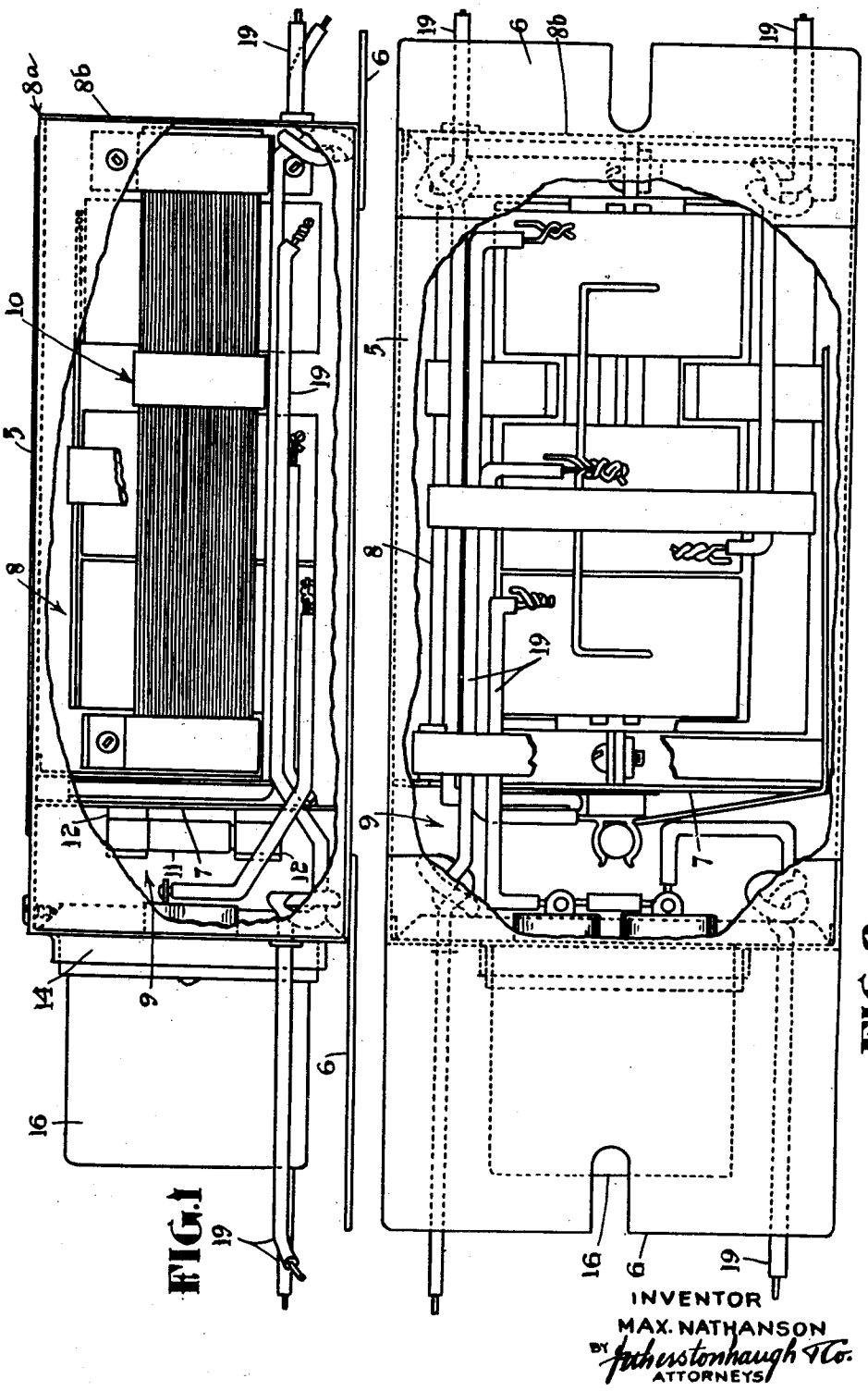

FIG. 1

FIG. 2

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Filed June 15, 1946 2 Sheets-Sheet 2

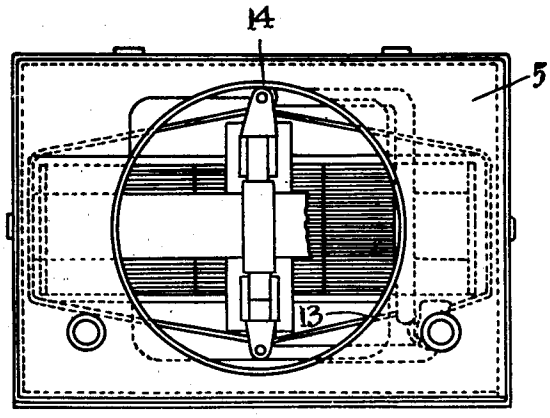

FIG. 3

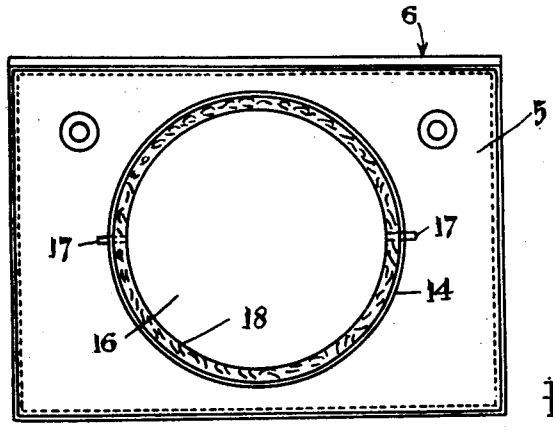

FIG. 5

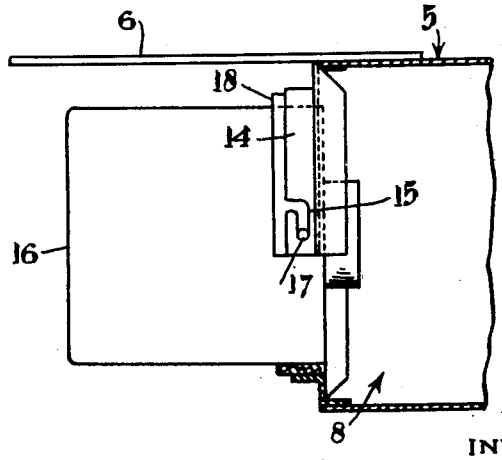

FIG. 4

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Patented July 6, 1948 2,444,522

UNITED STATES PATENT OFFICE

2,444,522

BALLAST UNIT FOR FLUORESCENT LAMP LIGHTING APPARATUS

Max Nathanson, Montreal, Quebec, Canada

Application June 15, 1946, Serial No. 676,892

1 Claim. (Cl. 175—357)

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This invention relates to an improved ballast unit for fluorescent lamp lighting apparatus and it comprises a ballast including an air-immersed condenser mounted outside the transformer casing so that the condenser is maintained in a relatively cool operating condition and is not subject to damage or "blow-out" due to overheating.

Another feature of the invention consists in the provision of a ballast unit in which an air-immersed condenser is mounted outside the transformer casing and is detachably secured thereto in a position closing an opening giving access to a fuse-containing compartment in which a fuse is mounted so that it is readily accessible upon removal of said condenser.

A further feature of the invention consists in the provision of a ballast unit including a casing divided by a transverse partition into a transformer compartment containing a transformer assembly and a fuse-compartment containing a fuse element, a wall of the fuse compartment having an opening therein normally closed by an exteriorly disposed air-immersed condenser detachably secured to said casing, said partition serving as a packing plate against which the ballast compound in which the component elements of the transformer assembly are embedded is tightly packed to completely fill the transformer compartment and thereby eliminate the danger of noisy operation which occurs when air spaces are left in the transformer-enclosing portion of the casing due to incomplete filling thereof by the ballast compound.

A preferred embodiment of the invention is shown in the accompanying drawing in which—

Fig. 1 is a side elevation of my improved ballast unit with a side wall portion of the transformer and fuse-enclosing casing broken away to disclose the transformer assembly and the fuse element within their respective compartments.

Fig. 2 is a bottom plan view of the ballast unit with a portion of the bottom wall of the transformer and fuse-enclosing casing broken away.

Fig. 3 is a view showing the condenser end of the ballast unit as it appears with the condenser removed.

Fig. 4 is a detail view showing the manner in which the air-immersed condenser is detachably secured to the fuse compartment end of the transformer and fuse-enclosing casing.

Fig. 5 is a view of the condenser end of the ballast unit as it appears with the condenser in place.

Referring more particularly to the drawings, 5 designates a transformer and fuse-enclosing casing equipped with suitable attaching plates 6 secured to the bottom wall thereof. The interior of the casing is divided by a metal partition 7 into a transformer compartment 8 and a fuse compartment 9. A conventional transformer assembly 10 is housed in compartment 8 and a fuse 11 is supported in compartment 9 by supporting clips 12 carried by partition 7. The fuse compartment end of casing 5 is provided with an opening 13 affording convenient access to fuse compartment 9 and fuse 11. This opening is bounded by an outwardly projecting collar 14 provided with diametrically opposite bayonet slots 15. One end of an exteriorly disposed air-immersed condenser 16 is fitted in collar 14 and detachably thereto by fastening pins 17 engaged in slots 15. Conduction of heat from casing 5 to condenser 16 is substantially reduced by the heat insulating effect of a fibre ring 18 interposed between the condenser and the collar 14. The fibre ring 18 is not absolutely necessary and may be omitted if desired.

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The component elements of transformer assembly 10 are embedded in the usual ballast compound (not shown) which is introduced under pressure into transformer compartment 8 and packed against partition 7 until the transformer compartment is so completely filled with the ballast compound as to leave no air spaces which, when present, result in noisy operation. After being completely filled with the ballast compound the end 8a of the transformer compartment through which the ballast compound is introduced is completely sealed by the end plate 8b. The end walls of casing 5 and partition 7 are provided with suitable openings for the passage therethrough of the necessary leads indicated at 19.

The details of the transformer assembly and the manner in which the transformer assembly, fuse and condenser, are connected in circuit with the luminescent lamps constitutes no part of the present invention and are not specifically described herein. In this connection, it is deemed sufficient to state that the circuit connections may be made in accordance with the proposals set forth in United States Patent No. 2,370,635, granted March 6, 1945, to J. H. Bridges, or in any other suitable manner.

The ballast unit described herein has several important advantages compared with the conventional ballast unit in which the condenser and fuse elements are mounted inside the transformer-enclosing casing. In the conventional unit the condenser and fuse are mounted in the compound filled transformer enclosure so that

they are not readily accessible for removal and inspection and "blowing-out" of the condenser due to overheating is a fairly frequent occurrence. In my improved assembly, the condenser, being mounted outside the transformer-enclosing casing and immersed in air, is maintained in a relatively cool operating condition and, therefore, is not only more accessible but has a much longer life.

The exteriorly disposed air-immersed condenser is also mounted on the transformer casing so that it constitutes a removable closure for a fuse compartment in which the fuse is mounted so that it is readily accessible when the condenser is removed. Transfer of heat from the transformer casing to the condenser is also substantially reduced by provision of the fibre ring 18.

The partition 7, separating transformer compartment 8 from fuse compartment 9, provides a convenient means for supporting the fuse in an accessible position adjacent the opening closed by the removable condenser and also provides a packing plate which excludes the ballast compound from the fuse compartment and provides a packing surface against which the ballast compound may be packed to ensure complete filling of the transformer compartment by said compound, thereby eliminating air spaces in the transformer compartment and the noisy operation resulting therefrom.

Having thus described the nature of my invention and a preferred embodiment thereof, it will be understood that various modifications may be resorted to within the spirit and scope of the

invention as defined by the appended claims. For example, the specific means described for detachably securing the condenser to the transformer casing may be replaced by any other suitable means of the detachable type, and the fuse element may be mounted on a wall of the fuse compartment other than that afforded by partition 7.

I claim:

In a ballast unit for luminescent lamp lighting systems, a transformer assembly, a casing housing said assembly, an end wall of the casing having an opening therein, a condenser detachably carried by the end wall of the casing and having one end mounted in said opening and the remainder of the condenser extending exteriorly of the casing, and a fuse carried in the casing between the transformer and the condenser and accessible through the end wall of the casing upon detachment of the condenser.

MAX NATHANSON.

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