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(54) A troffer.

(57) The lighting fixture of the invention comprises an elongate molded article, which cross section includes a hollow lenticular shaped section. The lenticular cross section imparts to the troffer a high degree of stiffness and resistance to twisting. The fixture may preferably be produced by extrusion of a suitable thermoplastic resin and may preferably be provided with suitable end caps. In a preferred embodiment electrical leads are embedded in the extruded part.

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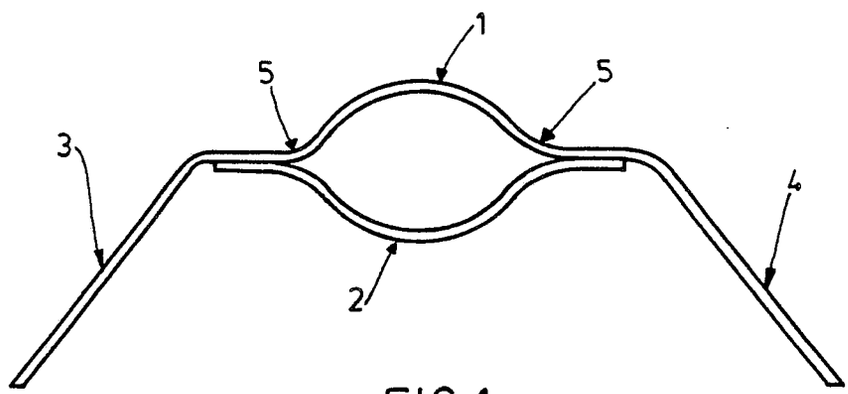

FIG. 1

A TROFFER

Field of the Invention

The invention is directed to a troffer and more particularly to a troffer made from a thermoplastic resin.

BACKGROUND OF THE INVENTION

Lighting fixtures comprising a housing - a troffer - for fluorescent lighting tubes are widely used. They are normally mounted on or suspended from the ceiling and are made of sheet metal. Attempts to have these made of thermoplastics have not hitherto been successful because the weight of the fixture and tubes exerts unacceptable bending stresses on the troffer making both installation and operation awkward. Design changes have been contemplated resulting in troffers which are difficult and too expensive to produce.

SUMMARY OF THE INVENTION

The lighting fixture of the invention comprises an elongate molded article which comprises a lenticular shaped cross section. The lenticular cross section imparts to the troffer a high degree of stiffness and resistance to twisting. The fixture may preferably be produced by extrusion of a suitable thermoplastic resin and may preferably be provided with suitable end caps. In a preferred embodiment electrical leads are embedded in the extruded part.

DETAILED DESCRIPTION OF THE INVENTION

The lighting fixture of the present invention is a thermoplastically molded elongate article the cross section of which - across its long dimension - comprises a lens shaped - lenticular - portion. In other words, the long article includes a reinforcing, hollow rib, running parallel to its long dimension, said rib having a lenticular cross section positioned perpendicular to the major axis of the elongate article.

The invention is best described by making reference to the drawing:

In Figure 1 there is described the cross section of the troffer of the invention. The lenticular section of the troffer is formed by joining the curved sections 1 and 2. The flanges 3 and 4 form a reflector area the size of which is not critical to the invention.

One section of the profile is conveniently coextruded with the second one and both are joined in the melt. Electrical wires 5, may be embedded in the resin prior to joining to provide electrical connection to end cap fittings. Alternatively, wires may be fed through and along the lenticular void after the unit has been extruded.

While the article of the invention is most readily produced by extrusion, it may also be produced by injection molding. Injection molded sections corresponding to 1 and 2 in Figure 2 may be produced and then joined by any of a number of methods known in the art, preferably sonic welding. Injection molding may advantageously be used in preparing lighting fixtures of the invention which comprises further complex geometrics, i.e. end caps.

Among the thermoplastic resins suitable for preparing the elongate article of the invention a polycarbonate resin such as Makrolon (from Mobay Corporation) is preferred.

In a preferred embodiment the lenticular cross section of the elongate article conforms to the shape which was disclosed in U.S. Patent 4,621,940 which is incorporated herein by reference. This structure was found to offer a high degree of resistance to bending yet permit such bending and repeated stressing without failure.

The two walls defining the lens portion of the cross section of the elongate article may be joined in any manner which substantially uniformly transfers stress from one to the other upon flexing or deflection of the article across its major axis in the plane of its minor axis.

In an especially preferred technique the elongate article is extruded as a unitary shape. The lens portion is made without the formation and the joining of two separate pieces.

Although the invention has been described in detail in the foregoing for the purpose of illustration it is to be understood that such detail is only for that purpose and that variations can be made by those skilled in the art without departing from the spirit and scope of the invention except as it may be limited by the claims.

Claims

1. A lighting fixture comprising a thermoplastically molded elongate article which displays a substantial resistance to twisting, characterized in that its cross section which is perpendicular to its major axis comprises a hollow lenticular shape.

2. The lighting fixture of Claim 1 molded from a thermoplastic aromatic polycarbonate resin.

3. The lighting fixture of Claim 1 molded by extrusion.

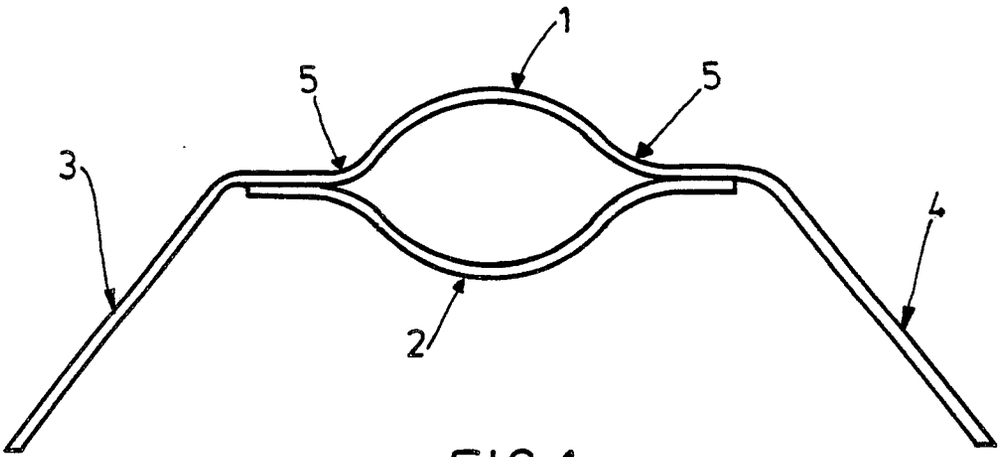

FIG. 1

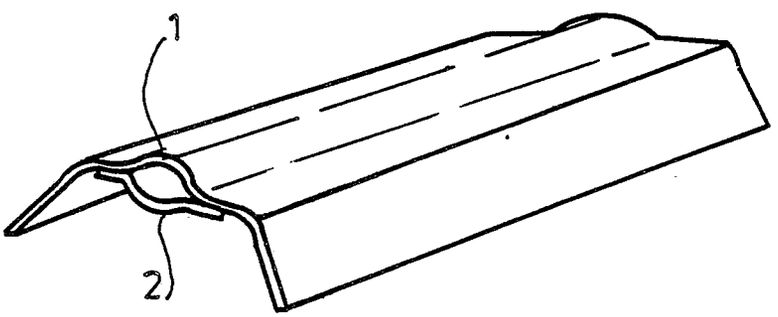

FIG. 2