

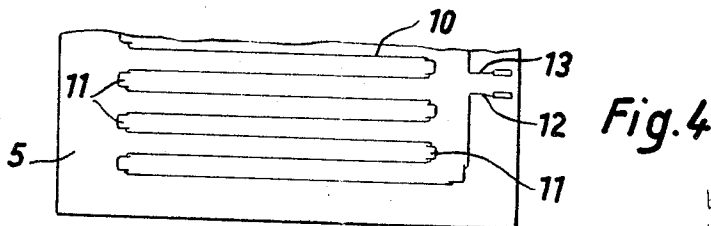
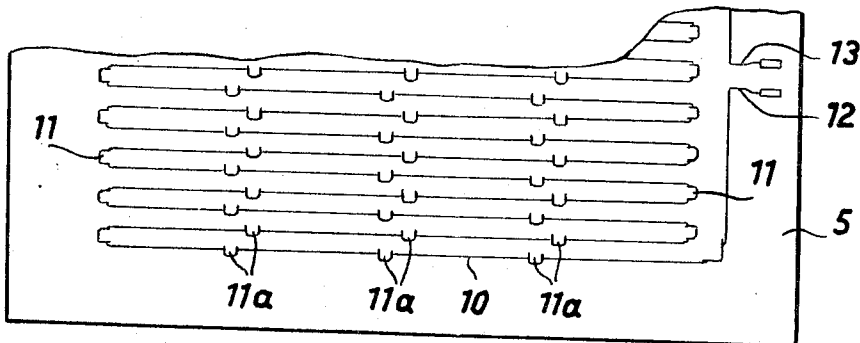
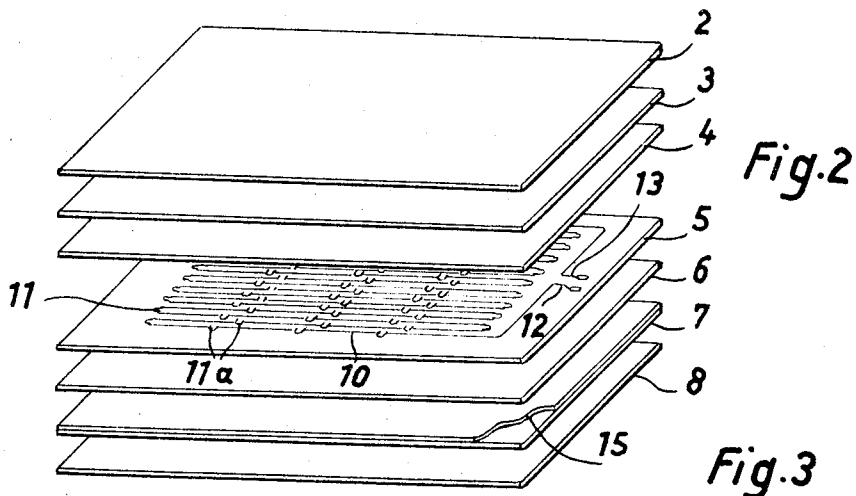
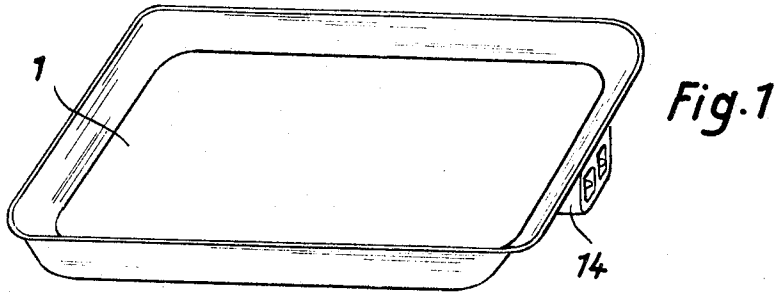
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ELECTRIC WARMPLATE

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3,513,296

ELECTRIC WARMPLATE

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6 Claims

ABSTRACT OF THE DISCLOSURE

An electric warmplate in the form of a tray, composed of a number of layers of kraft paper which is impregnated with a thermosetting plastic resin. One of the inner layers holds a heating wire, and the entire assembly is pressed together under heat.

BACKGROUND OF THE INVENTION

This invention relates to heatable plates, particularly to an electrically heated warmplate in the form of a tray. Heretofore, hot plates for cooking and the like, chafing dishes and warmplates for keeping cooked food warm are mostly made of metal with heating coils embedded in the bottoms thereof in insulating material. These articles are expensive. It is intended by this invention to present a reliable, durable, yet relatively inexpensive electric warmplate without resorting to the use of sheet metal, fiber glass or the like material for solving of the problem.

SUMMARY

The invention consists in such novel features, construction arrangements, combination of parts and improvements as may be shown and described in connection with the article herein disclosed by way of examples only and as illustrative of preferred embodiments. Several advantages are embodied in the structure of the article of this invention, mainly by using layers of a tough kraft or similar paper which is impregnated with a thermosetting plastic resin. This material is relatively inexpensive, but it is in this case perfectly equivalent to the considerably more expensive impregnated fiber glass or cotton fabrics. A heating wire is laid flatly on top of one of the layers which by their very nature consist of electric insulating material, and the flat windings are kept in place in this layer by punching little flaps out of the paper and by simply tucking the wire under these flaps. The layers are finally solidly combined by applying pressure and heat in a die press or the like into a sturdy, durable, heat and wear resisting tray. The free ends of the heating wire are set on the outside of the tray in a plug socket.

Objects and advantages of the invention will be set forth in part hereafter and in part will be obvious herefrom or may be learned by practicing the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

It is an object of the present invention to provide a novel electric warmplate consisting substantially of durable non-metallic material and containing electrical heating means such as a flat serpentine arranged wire.

Another object of the invention is to provide a relatively inexpensive article of manufacture which is of reliable quality.

A further object of the invention is to provide an article of manufacture which is very practical and efficient and which is simple and economical to manufacture.

Various further and more specific purposes, features

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and advantages will clearly appear from the detailed description given below taken in connection with the accompanying drawing which forms part of this specification and illustrates merely by way of example embodiments of the device of the invention.

BRIEF DESCRIPTION OF THE DRAWING

In the following description and in the claims, parts will be identified by specific names for convenience, but such names are intended to be as generic in their application to similar parts as the art will permit. Like reference characters denote like parts in the several figures of the drawing, in which:

FIG. 1 shows a tray according to the invention;

FIG. 2 shows in an exploded isometric view the layers of the thermosetting resin-impregnated paper;

FIG. 3 shows the layer carrying the heating wire windings, partly broken away;

FIG. 4 shows another layout of the heating wire on the carrying layer of impregnated paper.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now in more detail to the drawing illustrating a preferred embodiment by which the invention may be realized, there is in FIG. 1 a typical tray 1 which is manufactured by the conventional method by means of pressing of a plurality of layers of paper which are impregnated with a thermosetting plastic resin, in a heated die, mold or other suitable device. FIG. 2 illustrates the various layers 2-8 of the impregnated paper. Obviously the top layer 2 as well as the bottom layer may consist of a decoratively printed, impregnated paper (not shown in the drawing).

One of the layers which is approximately in the center of the entire assembly, for example layer 5, carries the electric heating wire 10, which is laid in a flat serpentine winding on top of layer 5. Small tabs or tongues 11 and 11a are punched out of the paper, and wire 10 is tucked under tabs 11 and under tabs 11a at the return points of the winding. By this operation, wire 10 is easily and conveniently assembled on layer 5 and is precisely held thereon during the subsequent final assembly and pressing operation. The free ends 12, 13 of wire 10 are extended beyond the edge of the paper and are eventually set in the plug socket 14 which is eventually attached to the outside of tray 1.

Obviously heating wire 10 also may be laid over a part of tray 1, in which case heating wire 10 only will have a short length, and thus tabs 11a will be required only at the return points of the windings (FIG. 4).

Furthermore, one of the layers which is below heating wire carrying layer 5, for example layer 7, is lined on one side with a bright metal foil 15, consisting preferably of aluminum or the like metal. The heat which is downwardly radiated by heating wire 10 is reflected by this lining upwardly toward the face layer 2 of tray 1.

The thermosetting plastic resin, preferably selected from the phenolics group renders the kraft or other suitable paper which is impregnated thereby, electrically non-conductive, so that the structure of tray 1 is safe to handle; on the other hand, this kind of impregnation furthermore renders tray 1 heat- and wear-resisting.

It is preferable to use kraft paper for the layers 2 to 8 on account of its strength. However, any other suitable strong paper or paper-like material may be used.

While the invention has been described and illustrated with respect to certain preferred examples which give satisfactory results, it will be understood by those skilled in the art after understanding the principle of the invention, that various other changes and modifications may be made without departing from the spirit and scope of

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the invention and it is intended therefor in the appended claims to cover all such changes and modifications.

What is claimed is:

1. An electric warmplate substantially in the form of a tray, comprising a plurality of layers, all of said layers consisting of paper of substantially equal size, said layers of paper being impregnated with a plastic resin, belonging to the group of thermosetting resins, an electric heating wire laid out on one of the center paper layers, said paper layers with said electric heating wire therebetween being heat pressed together and said one of said center paper layers having a plurality of tabs being punched out therefrom, said wire being arranged in the form of a flat winding on said one of said center layers and being held thereon by said tabs.

2. An electric warmplate according to claim 1, said wire having free ends leading to the outside of said wire carrying layer, and a socket on the outside of said warmplate, said free ends terminating in said socket.

3. An electric warmplate according to claim 1, said layers of paper comprising kraft paper.

4. An electric warmplate according to claim 1, and heat reflecting means placed on one side of one of said layers, said reflecting means being positioned substantially below

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said wire carrying layer of paper, whereby heat from said wire may be reflected upwardly toward the top one of said layers of paper.

5. An electric warmplate according to claim 1, said thermosetting plastic resin being selected from the group of phenolic resins.

6. An electric warmplate according to claim 1, said tabs being punched out only at the return points of said windings.

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219—345; 338—293