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(71) Applicant: De Rochemont, August René
No. 16, Vondelstraat
NL-7471 XV Goor(NL)

(72) Inventor: Tiben, Herman Heinrich Jozef
Hendrik ter Kuilestraat 33
NL-7547 BB Enschede(NL)

(74) Representative: Schumann, Bernard Herman Johan et al,
OCTROOIBUREAU ARNOLD & SIEDSMA Sweelinckplein 1
NL-2517 GK The Hague(NL)

(54) System and method for covering the lower side of a composite ceiling which consists of a frame and ceiling plates supported by said frame.

(57) The invention relates to a device for covering the lower side of a panel ceiling comprising a framework and ceiling boards supported thereby characterized by a flexible synthetic-resin sheet, by raised rims transverse thereof and by flanges extending outwardly with respect to said raised rims and having outer dimensions substantially corresponding to the module of the framework. Further the invention relates to a method of covering the lower side of a panel ceiling comprising a framework and ceiling boards supported thereby by applying a coating to the bottom side of the boards characterized in that devices as claimed in the foregoing are arranged beneath the ceiling boards.

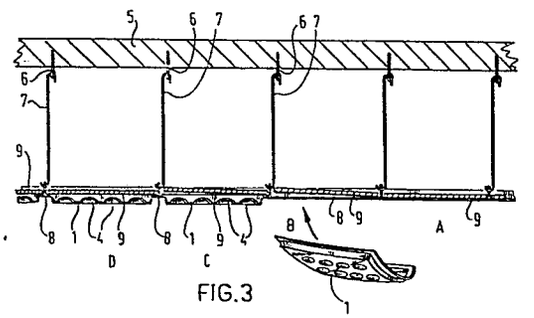

FIG.3

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Short title: System and method for covering the lower side of a composite ceiling which consists of a frame and ceiling plates supported by said frame

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Panel ceilings comprising a framework and ceiling boards supported thereby require, after some time, an upkeep, since under the action of the ambiance, dirt and smoke often unacceptable decoloration will occur. It is, therfore, common practice to provide the visible lower side of such ceilings with a coating, for example, of paint. Sometimes even the ceiling boards are removed from the framework and plastered with a flexible coating material, after which they are re-inserted into the framework. If the ceiling boards have warped under the action of leaking water or moisture, they have to be replaced. All these operations are circuitous, time-consuming and require the room having such a ceiling to be put out of use.

The invention has for its object to provide a device and a method by which the aforesaid inconveniences are avoided.

For this purpose the invention provides a device for covering the lower side of a panel ceiling comprising a framework and boards supported by the latter, said

device being characterized by a flexible synthetic-resin sheet, raised rims transverse thereof and flanges extending outwardly with respect to the raised rims and having outer dimensions substantially corresponding to the module of the framework. Such a device, which can be made from comparatively light-weight material and requires little space, can be simply arranged below a ceiling board in the ceiling, preferably by arranging it by the flanges between the framework and the ceiling boards usually bearing loosely on the framework. In particular, this operation is carried out by slightly lifting each ceiling board in the framework, by bending a synthetic-resin sheet and inserting it into an opening in the framework, by laying down the flanges on the framework in manner such that the raised rims extend downwards with respect to said flanges and by laying the ceiling board on the flanges. In this way all ceiling boards of the panel ceiling can be successively withdrawn from sight without the need for putting the room comprising the ceiling out of use. Moreover the application of the cover sheets can be interrupted at any instant. Thanks to the flexibility of the cover sheets the ceiling boards need hardly be lifted so that superjacent pipes or insulating layers are not disturbed or displaced.

The synthetic-resin sheet to be employed in the method described can be very suitably manufactured by a vacuum moulding method from a plate of thermo-plastic synthetic resin. The part of the synthetic-resin sheet remaining visible can be imparted in a simple manner the desired appearance. For example, the central part of the synthetic-resin sheet may suitably be provided with profiles, which can already be done in the moulding method. By suitably selecting the colour of the basic material a desired colour of the sheet can be obtained, whilst it is furthermore possible to apply a given coating

prior to mounting, more particularly a fibrous coating so that a velvety appearance is obtained. Such a fibrous coating has attractive acoustic and aesthetic properties.

Although various synthetic resins are appropriate for the manufacture of the synthetic-resin sheet, it is preferred to use flame extinguishing polystyrene, to which, if desired, fillers and suchlike conventional additives can be added in the conventional manner.

The invention will be described more fully with reference to the drawing illustrating a few embodiments of the device according to the invention and the use thereof.

Fig. 1 is a perspective bottom view of a covering device formed by a synthetic-resin sheet in accordance with the invention.

Fig. 2 is a variant of the device shown in fig. 1.

Fig. 3 is a vertical sectional view of a panel ceiling illustrating various stages of the method in accordance with the invention.

Fig. 4 shows a stack of covering devices of fig. 1 in a vertical sectional view.

Referring to figs. 1 and 2 the perspective bottom view shows two embodiments of covering devices according to the invention, each comprising a flexible synthetic-resin sheet 1, four raised rims 2 transverse thereof and flanges 3 located in a common plane and extending outwardly with respect to the raised rims. The sheet part inside the raised rims 2 may either be flat as shown in fig. 1 or be provided with various profiles.

Fig. 2 shows by way of example hemospherical embossed parts 4 on said sheet part.

Fig. 3 shows in a vertical sectional view a panel ceiling arranged in a building. The vertical section at right angles thereto is equal thereto or differs in a horizontal sense by a given factor thereof in dependence upon the dimensions of the ceiling boards employed. With the aid of fastening eyelets 6 longitudinal and transverse profiles 8 assembled to form a framework are suspended to

hangers 7 on the floor 5 of a building. These profiles 8 having the shape of an inverted T define openings which are slightly smaller than the dimensions of rigid ceiling boards 9 loosely bearing on the flanges of said profiles.

Fig. 3 illustrates various stages of the application of the cover for such a panel ceiling. On the right-hand side the initial state of the panel system is shown at A. For applying a cover sheet 1, as is indicated at B, the rigid ceiling board 9 is slightly lifted and after being slightly bent the cover sheet is inserted upwards through the opening thus formed. At C it is indicated that the cover sheet is laid down by its flanges on the flanges of the framework and at D it is indicated that the ceiling board is put down on said flanges of the cover sheet so that the resultant stiffening prevents the cover sheet from being lifted by pressure differences between the bottom and top sides of the panel ceiling. Fig. 3 shows one mode of application of the cover sheets of fig. 2, but obviously various other embodiments of cover sheets may be used in similar manner.

By the method according to the invention the appearance of panel ceiling can be modified in a simple manner; for example, cover sheets of different colours may be arranged in a given array, which can be readily adapted to a modification of the further arrangement of the room provided with the panel ceiling.

The cover sheets are preferably manufactured by means of a vacuum moulding method from flat, thermoplastic material, said moulding method having the advantage that the profiles of the sheets can be adapted to the user's requirements at comparatively low costs. In connection with the moulding method as well as in view of transport and storage the upwardly extending rims 2 of the cover sheets are preferably slightly tapering, since thus the cover sheets can be nested together in the manner illustrated in fig. 4.

A panel ceiling satisfying given requirements of

acoustic and fireproof properties will maintain these properties also after the application of the cover sheets. The sound absorbing properties will even be enhanced by the flexible, limp cover sheets.

Claims

1. A device for covering the lower side of a panel ceiling comprising a framework and ceiling boards supported thereby characterized by a flexible synthetic-resin sheet (1), by raised rims (2) transverse thereof and by flanges (3) extending outwardly with respect to said raised rims and having outer dimensions substantially corresponding to the module of the framework.

2. A device as claimed in claim 1, characterized in that the central part of the synthetic-resin sheet (1) is provided with profiles.

3. A device as claimed in claim 1 or 2 characterized in that the synthetic-resin sheet (1) is provided on at least one side with a fibrous coating.

4. A device as claimed in claim 1, 2 or 3 characterized in that the synthetic-resin sheet is manufactured by vacuum moulding.

5. A device as claimed in anyone of claims 1 to 4, characterized in that the synthetic-resin sheet is made at least partly of flame-extinguishing polystyrene.

6. A method of covering the lower side of a panel

ceiling comprising a framework and ceiling boards supported thereby by applying a coating to the bottom side of the boards characterized in that devices as claimed in anyone of claims 1 to 5 are arranged beneath the ceiling boards.

7. A method as claimed in claim 6, characterized in that each ceiling board (9) is slightly lifted, a synthetic-resin sheet (1) is bent and inserted through an opening in the framework, the flanges (3) are laid down on the framework in a manner such that the raised rims (2) extend downwards with respect to the flanges and the rigid board is laid down on said flanges.

FIG.1

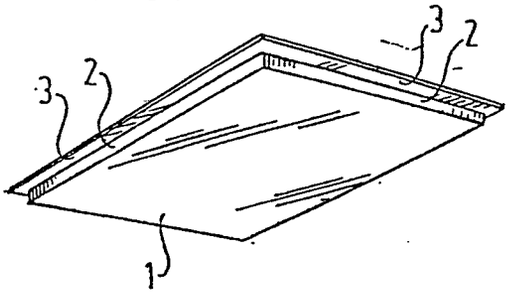


FIG.2

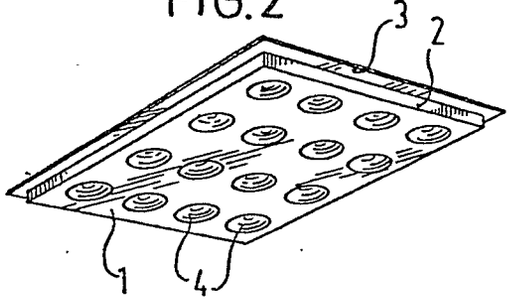
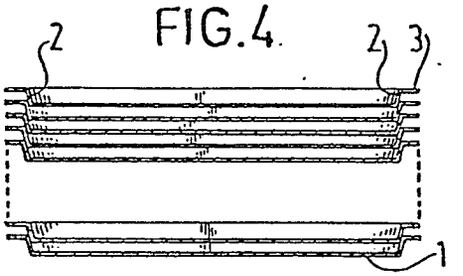


FIG.4



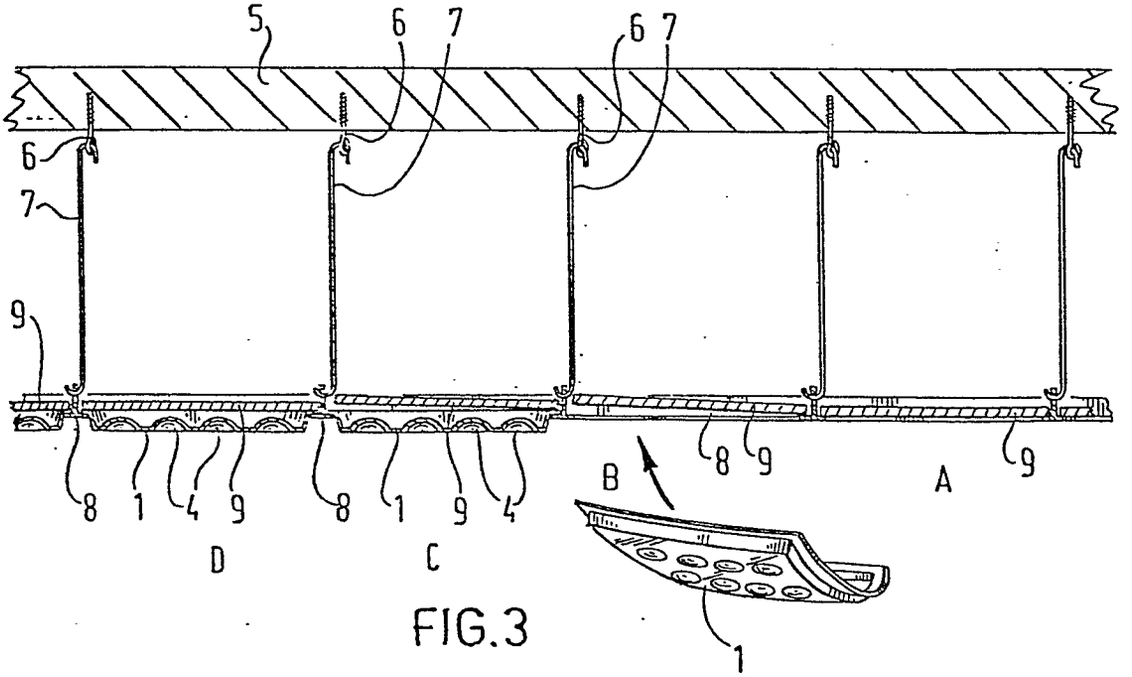


FIG.3