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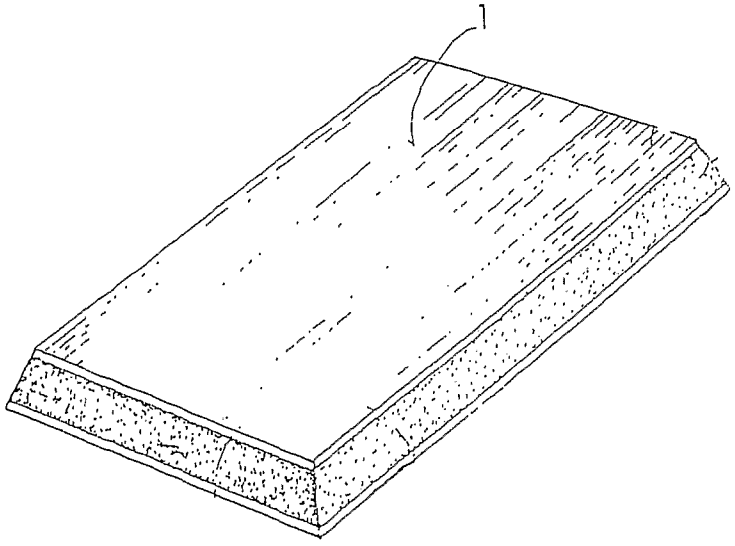
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) **Title:** PANELS AND CONDUITS WITH ANTIMICROBIAL CHARACTERISTICS



(57) **Abstract:** The invention relates to the field of panels and/or conduits made of polyurethane foam, in particular, for the conveyance of air for environmental conditioning, with one or more faces covered with laminas of a metallic material, treated with a silver ion solution with an antimicrobial function to improve the hygiene possibilities in rooms and conduits where said panels and conduits are installed.

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DESCRIPTION

PANELS AND CONDUITS WITH ANTIMICROBIAL CHARACTERISTICS.

Technical field

The invention relates to panels and conduits made of polyurethane foam, in particular for the conveyance of air for environmental conditioning, with one or more faces covered with laminas of a metallic material, treated with silver ions.

Background Art

There exist commonly known polyurethane panels and conduits with covers realized with laminas of metallic, plastic or paper material which are utilized to satisfy manifold needs whose main aim is to maintain the temperature of rooms and conduits within a pre-fixed band.

These types of polyurethane insulating panels are utilized, for example, to maintain the temperature of cold rooms.

Said polyurethane insulating conduits are utilized, instead, for example, to maintain the temperature in systems for the conveyance of hot and cold air in winter and summer conditioning systems.

One of the uses of said panels and conduits is in hospital organizations, in foodstuff production plants, in semiconductor production plants and in general in rooms where particular hygienic conditions must be respected.

To maintain the necessary hygienic conditions, said panels and said conduits undergo frequent washing treatments. These treatments impose a stop to the activity or use of the rooms in which said panels and/or conduits are installed with expenditure of energy and sometimes, not

succeeding, despite the washing, to reach the desired hygienic conditions.

It is also known that silver ions have very potent antimicrobial properties. Likewise, it is known that silver ions are an active antimicrobial agent for at least 10 years and to obtain an antibacterial effect, the silver ions must be available in solution on the bacterial surface. The silver ions destroy bacteria instantly, blocking the enzymatic respiratory system and altering the microbial DNA and the cell wall, while they do not have toxic effects on human cells in vivo.

Disclosure of Invention

The aim of this invention is to realize a panel and/or a conduit able to perform an antimicrobial function, rendering possible a reduction in the frequency of the washing treatments which are presently effected for the commonly known panels and conduits.

This aim is achieved by means of the use of silver ions applied to the surface of the panel and/or conduit covering lamina facing the interior of rooms or conduits which must respect certain hygienic conditions.

The bacteria contained in the air present inside said rooms or said conduits, upon coming into contact with the covering lamina of the panels and/or said conduits, treated with silver ions, are destroyed thanks to the antimicrobial properties of said silver ions.

A clearer understanding of the invention will emerge from the description that follows of a preferred embodiment, provided in the form of a non-limiting example, with reference to the accompanying drawings, in which:

- figure 1 shows a perspective view of the panel in question;

- figure 2 shows a perspective view of a portion of the conduit realized with the panel for conduits in question;
- figure 3 shows a perspective view of a section of the conduit in question.

With reference to figures 1, 2 and 3, number 1 denotes a silver ion solution and finishing varnish on the covering lamina of the panel or conduit in question spread over the entire covering surface.

The antimicrobial capacity of the silver ions occurs upon the bacteria's contact with the silver ions. Applied to the surface of the panel and/or conduit present in the room or conduit concerned is a solution in which silver ions are present. In the embodiment shown in figures 1, 2 and 3, the silver ions are applied to the surface of the profiles by creating a solution of said silver ions with the finishing varnish of the covering lamina of the panel which is spread over the entire surface of said lamina.

In the description of the embodiment, specific reference is made to the application of a solution comprised of silver ions and finishing varnish to one or more covering laminas of the panel and/or conduit but naturally, the methods by which the silver ions are applied to said surface of the covering can vary according to the technical knowledge of the sector without falling beyond the scope of protection of the annexed claims.

Claims

1. A panel comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one face of at least one covering sheet.
2. A panel according to claim 1, characterized by the fact that the covering sheet, where there are silver ions present, is made of metallic material.
3. A panel according to claims 1 and 2, characterized by the fact that the covering sheet, where there are silver ions present, is made of aluminum.
4. A panel according to claim 1, characterized by the fact that the covering sheet, where there are silver ions present, is made of plastic material.
5. A panel according to claim 1, characterized by the fact that the covering sheet, where there are silver ions present, is made of paper material.
6. A panel comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one face of at least one metal covering sheet by means of a finishing varnish applied to said sheet.
7. A panel comprising an insulating material made of rigid foam positioned between two covering sheets, characterized by the fact that silver ions are present on at least one face of both metal covering sheets by means of a finishing varnish applied to said sheets (1).

8. A panel for conduits for the conveyance of air for environmental conditioning comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one face of at least one covering sheet.
9. A panel for conduits for the conveyance of air for environmental conditioning according to claim 8, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of metallic material.
10. A panel for conduits for the conveyance of air for environmental conditioning according to claims 8 and 9, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of aluminum.
11. A panel for conduits for the conveyance of air for environmental conditioning according to claim 8, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of plastic material.
12. A panel for conduits for the conveyance of air for environmental conditioning according to claim 8, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of paper material.
13. A panel for conduits for the conveyance of air for environmental conditioning comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one face of at least one metal covering sheet by means of a finishing varnish applied to said sheet.
14. A panel for conduits for the conveyance of air for environmental

conditioning comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one face of both metal covering sheets by means of a finishing varnish applied to said sheets (1).

15. A conduit comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one face of at least one covering sheet.

16. A conduit according to claim 15, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of metallic material.

17. A conduit according to claims 15 and 16, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of aluminum.

18. A conduit according to claim 15, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of plastic.

19. A conduit according to claim 15, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of paper material.

20. A conduit comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one side of at least one metal covering sheet by means of a finishing varnish applied to said sheet.

21. A conduit comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by

the fact that silver ions are present on at least one side of both metal covering sheets by means of a finishing varnish applied to said sheets (1).

22. A conduit for the conveyance of air for environmental conditioning comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one side of at least one covering sheet.

23. A conduit for the conveyance of air for environmental conditioning according to claim 22, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of metallic material.

24. A conduit for the conveyance of air for environmental conditioning according to claims 22 and 23, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of aluminum.

25. A conduit for the conveyance of air for environmental conditioning according to claim 22, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of plastic material.

26. A conduit for the conveyance of air for environmental conditioning according to claim 22, characterized by the fact that the covering sheet, wherever there are silver ions present, is made of paper material.

27. A conduit for the conveyance of air for environmental conditioning comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one face of at least one covering

sheet by means of a finishing varnish applied to said sheet;

28. A conduit for the conveyance of air for environmental conditioning comprising an insulating material made of rigid foam positioned between at least two covering sheets, characterized by the fact that silver ions are present on at least one face of both metal covering sheets by means of a finishing varnish applied to said sheets (1).

29. A conduit according to any of the claims from 15 to 28 characterized by the fact that said conduit has any section.

FIG.1

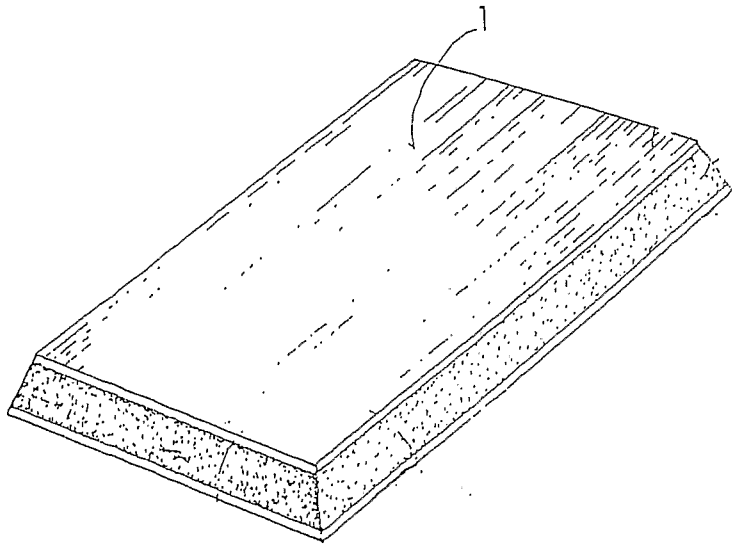


FIG. 2

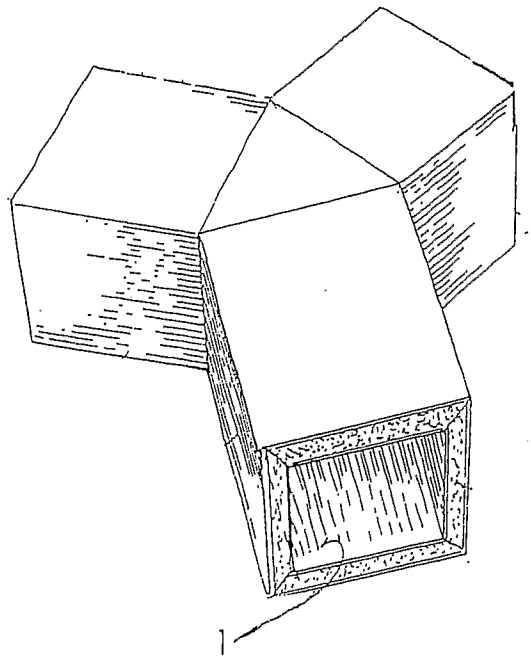
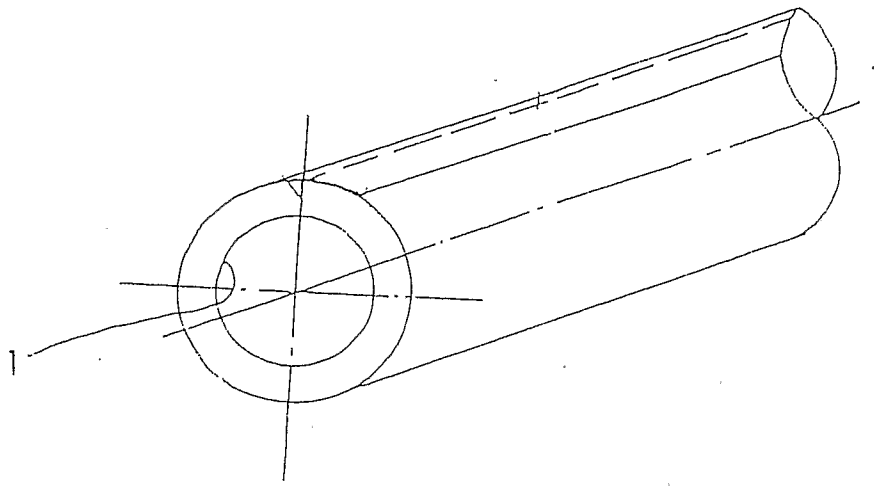


FIG. 3



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/003033

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61L9/00 E04B1/76 E04C2/292 F24F3/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E04B E04C F24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	EP 0 940 249 A (DOW GLOBAL TECHNOLOGIES INC) 8 September 1999 (1999-09-08) paragraph [0015] - paragraph [0020]; figure 1	1
Y	US 5 487 412 A (MATTHEWS ET AL) 30 January 1996 (1996-01-30) the whole document	1,4,8, 11,15, 18,22, 25,29
Y	US 2004/185212 A1 (BOGRETT BLAKE BOYD ET AL) 23 September 2004 (2004-09-23) paragraphs [0044], [0047], [0029]; figure 1	1

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
7 July 2006	25/07/2006

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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