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(54) A flexible anti-shock and/or anti-scratch sheet

(57) A flexible sheet (2) of a plastics material is described which has a smooth surface (4) and an opposite corrugated surface (6); the sheet (2) is obtained by heat-extrusion of a plastics material. The sheet (2) can be used to protect items around which it is wrapped.

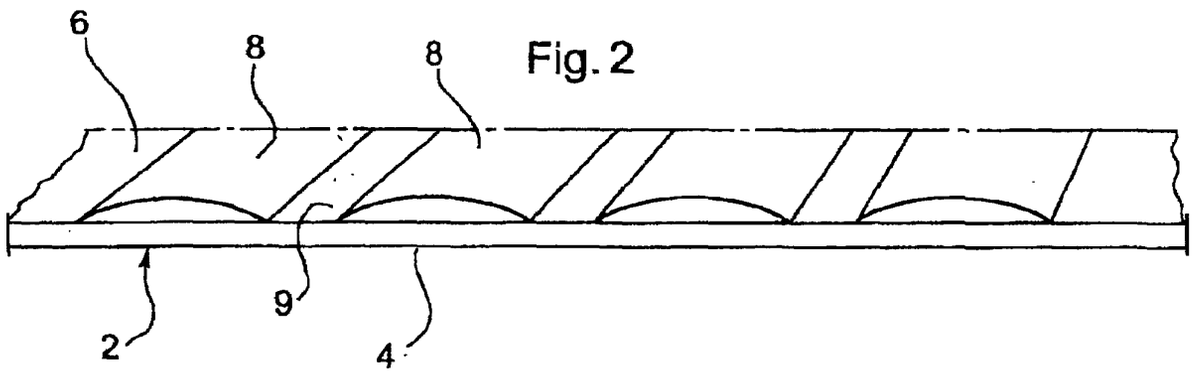

Fig. 2

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Description

[0001] The present invention relates to a flexible anti-shock and/or anti-scratch sheet and which protects against atmospheric agents and from oxidation and corrosion.

[0002] During the transport and storage of a wide variety of materials and/or products, it may be necessary to protect them both from being damaged as a result of shocks or scratches and from chemical reactions; they must be protected, for example from corrosion caused by steam condensation, or from sunlight (and atmospheric agents in general), as well as from chemical agents such as oils, grease, soap, solvents and the like.

[0003] The object of the present invention is to provide a sheet which can be used to wrap materials or products in order to protect them from the type of deterioration described above.

[0004] This object is achieved according to the invention by providing a flexible sheet of plastics material, having the characteristics specifically claimed in the Claims which follow.

[0005] The invention will now be described with reference to the appended drawings, supplied purely by way of non-limitative example and in which:

- Figure 1 is a cross section of a first embodiment of a sheet of the invention;
- Figure 2 is a perspective view of the sheet of Figure 1; and
- Figures 3 to 8 are cross sections of second, third, fourth, fifth, sixth and seventh embodiments respectively of the sheet according to the invention.

[0006] With reference to Figures 1 to 8, the sheet 2 of the invention includes a smooth surface 4 and a corrugated surface 6 having corrugations 8.

[0007] In a corrugation 8 and the adjacent are present areas 9 deformable by folding.

[0008] The sheet of the invention is produced by heat extrusion and the material used can therefore be for example polyethylene, nylon, polypropylene, PVC, polystyrene, etc. and mixtures thereof, or in any case a plastics material which can be heat extruded.

[0009] The sheet of the invention is manufactured as follows; the material which is being used is melted in the fusion chamber of an extruder, not shown, and is then heat-extruded at a temperature between 60°C and 350°C, in dependence on the material being used.

[0010] During the first step of the extrusion, the material is in the form of a smooth sheet; while it is still hot it is passed between a flat surface and a surface which is the negative of the desired shape of the surface of the finished sheet. Once it has passed through the forming surfaces, the product is cooled and then rolled up or cut to specific sizes of sheets.

[0011] Naturally, the object of the invention remaining unchanged, embodiments and manufacturing details may vary widely from those described and illustrated, without departing thereby from the scope of the invention. For example, the manufacturing method could involve the use of self-expanding or heat-expanding resins or other steam-based processes in order to achieve a product which is expanded, by a percentage which could be varied, thereby making the sheet lighter and reducing costs at the same time.

[0012] The sheet could be either single layered or bonded to a layer of a paper, plant, mineral, plastics, metal or synthetic material, thereby strengthening the product or altering the consistency thereof.

[0013] Corrosion inhibitors or other inhibitors operable to prevent problems caused by humidity, condensation, sunlight, or either high or low temperatures may be provided; the sheet could also be produced with additives providing protection in the event of contact with chemical agents, oil, grease, soap, solvents, varnishes and the like.

[0014] The surfaces or sides 4 and 6 could both be corrugated.

Claims

1. A flexible sheet (2) of a plastics material, **characterised in that** it includes at least one corrugated surface or side (4, 6).

2. A sheet according to Claim 1, **characterised in that** one surface (4) is smooth and the opposite surface (6) is corrugated.

3. A sheet according to Claims 1 or 2, **characterised in that** the corrugated surface/surfaces (4, 6) has/have areas (9) between one corrugation (8) and the next which can be deformed by folding.

4. A sheet according to any preceding Claim, **characterised in that** it is made of a heat-extrudable plastic material.

5. A method for manufacturing a flexible sheet according to Claims 1 to 4, **characterised in that** it includes the steps of:

   a) melting the material present in the fusion chamber of an extruder;
   b) heat-extruding the molten material obtaining a sheet;
   c) passing the sheet between two surfaces while it is still hot;
   d) cooling the sheet thus obtained.

Fig.1

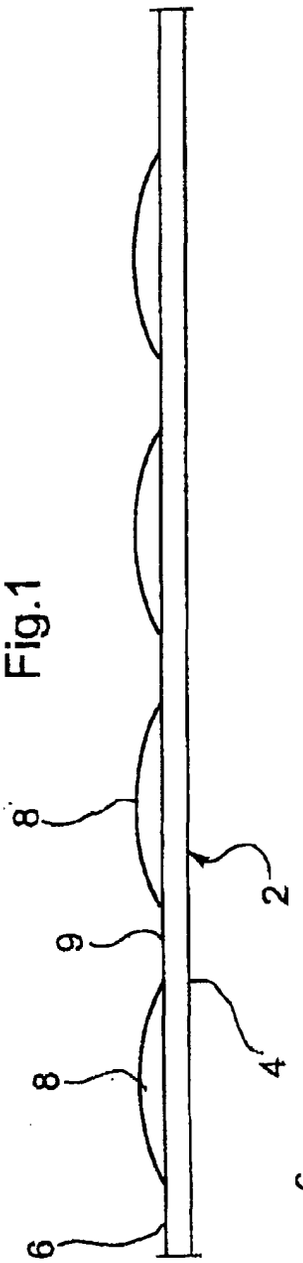


Fig.2

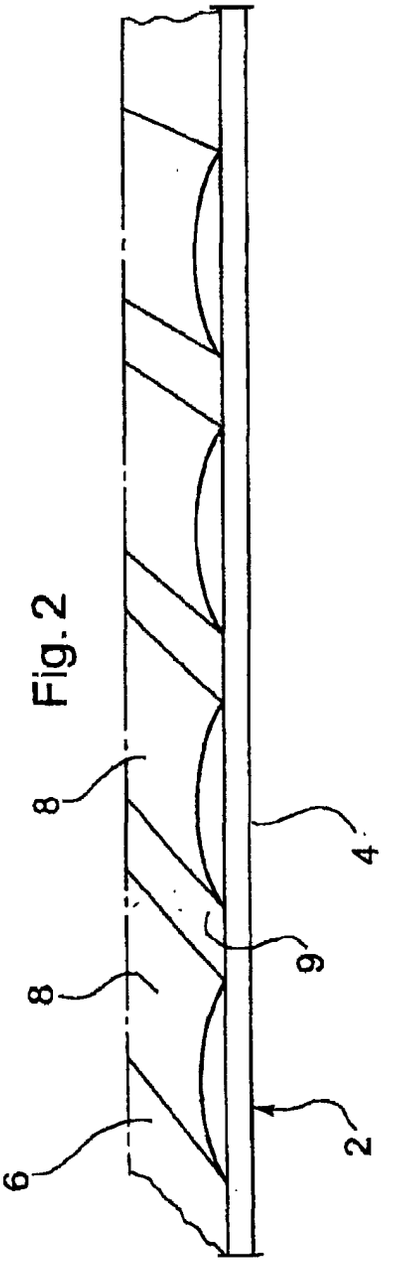


Fig.3

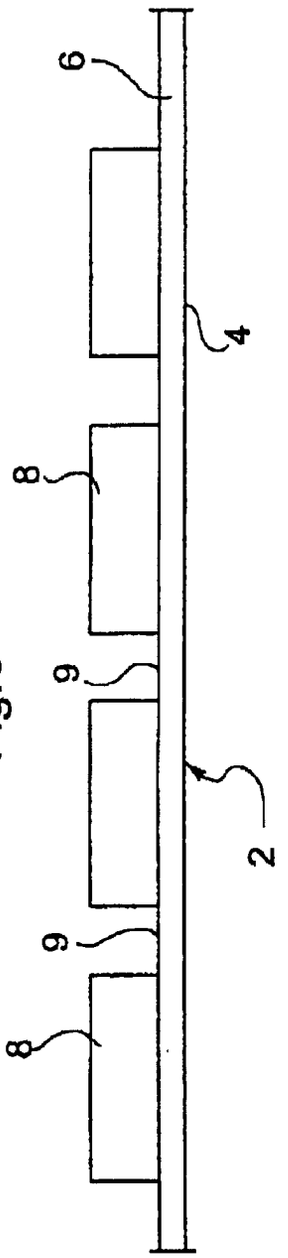


Fig.4

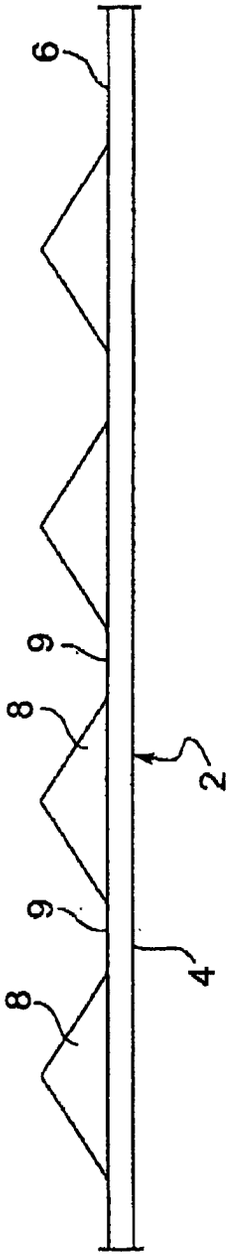
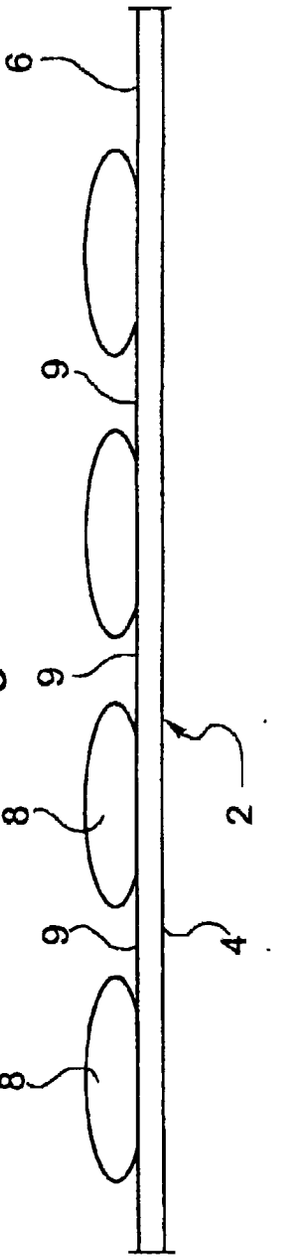


Fig.5



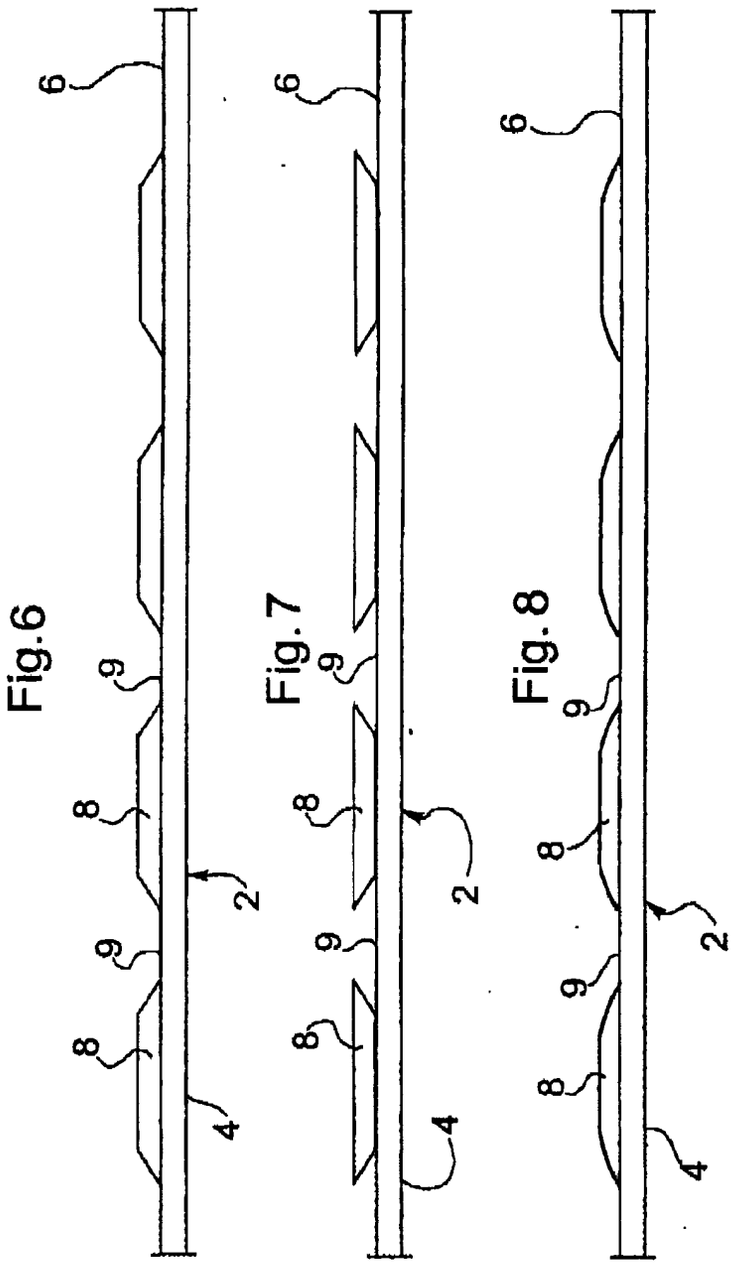


Fig.6

Fig.7

Fig.8

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EUROPEAN SEARCH REPORT

Application Number
EP 02 00 3716

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 4 499 040 A (JINNO KATSUSHI ET AL) 12 February 1985 (1985-02-12) * the whole document *	1-5	B65D81/03 B29C59/02
X	GB 2 089 460 A (INTERTUBE;NORTENE SA) 23 June 1982 (1982-06-23) * page 2, line 14-28; figure 4 *	1-4	
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65D
B29C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	21 May 2002	Balz, O

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 00 3716

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82