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(54) **PROTECTOR FOR PAINTING OR OTHER SURFACE TREATMENTS**

(57) Protector (1) to mask floors, walls or other surfaces, which comprises a protective element (2) and a fixing element (4) to secure the protector (1) to a surface (3) to be masked. The protective element (2) includes a set of sheets (7) connected to the fixing element (4). The sheets (7) are arranged in parallel and are individually separable from the fixing element (4) so that they can be used individually and consecutively. The invention provides a simple and reusable protector for use in painting booths at automotive workshops and for other uses.

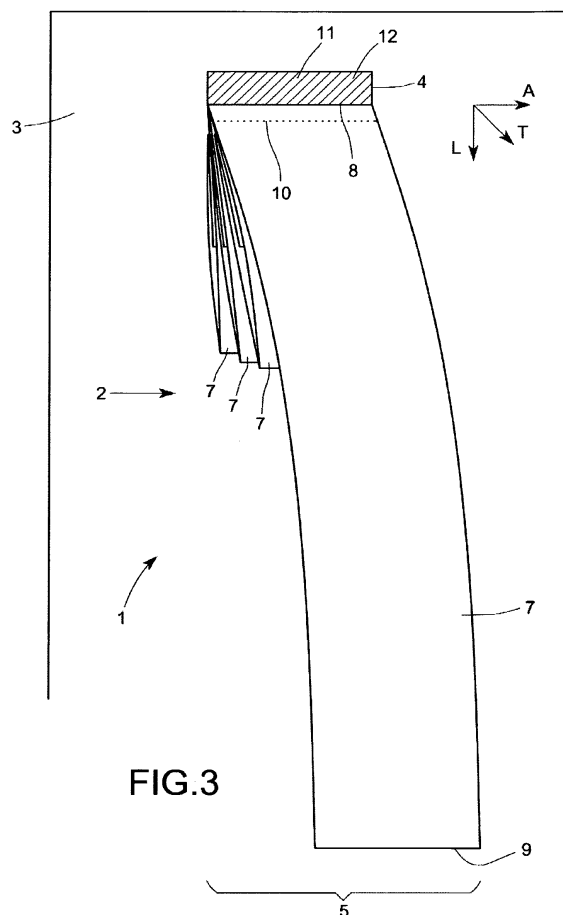


FIG.3

Description

Field of the Invention

[0001] The invention relates to a protector to cover and protect walls, floors or other surfaces during painting or other surface treatments.

Prior Art

[0002] It is known that, prior to commencing certain painting tasks and other surface treatments, it is advisable to previously cover, protect or mask the floor, walls or other surfaces that are adjacent to the surface to be treated, with some kind of plastic, paper or other type of protector. The purpose of this preparation prior to the application of the treatment is to prevent any damage or undesired deposit of paint or other products or materials used in the treatment on these adjacent surfaces.

[0003] More specifically, in the automotive sector, painting booths consisting of an enclosed area into which the entire vehicle or one or several parts of a vehicle is introduced for its subsequent painting or repainting are known. The painting booth reproduces the perfect environment for quality painting and its use provides additional advantages from diverse points of view. On the one hand, the painting booth helps to ensure that the painting work is carried out under proper safety and environmental conditions; in this respect, the booth is usually fitted with diverse systems that retain a large part of the suspended paint molecules as well as diverse contaminating volatile organic compounds which tend to be produced during the painting process. Another feature of the painting booth is to facilitate paint drying after its application. To do so, the painting booth works like a drying furnace so that the temperature inside the painting booth rises significantly with respect to atmospheric temperature. In painting booths at auto body shops, also commonly known as paint and body shops, temperatures of around 80°C may be reached.

[0004] Like with other surface treatment works, prior to the application of the paint inside the booth, the surfaces of the part or vehicle to be treated that do not require painting must be protected and it is also necessary to protect the surfaces of the painting booth.

[0005] A protector consisting of a plastic that incorporates adhesive masking tape to facilitate its positioning on the surface to be protected is known in the prior art. This type of protector is widely used to protect surfaces in professional or amateur decorative paintwork. This plastic protector with masking tape is also often used in the automotive sector to protect part of the vehicle or parts prior to being introduced inside a painting booth; in this case, the useful life of the protector is limited to the time during which the vehicle or part remains inside the booth; after passing through the painting booth, the protector usually undergoes some deterioration or loses its adhesive properties. Therefore, commercial protectors

consisting of a plastic with incorporated masking tape are insufficient to protect surfaces inside the painting booth and are not generally used for this purpose. If used, as a result of the environmental conditions inside the painting booth and the insufficient quality of this type of protector, it is normally necessary to re-roll and replace the protector prior to the treatment of each vehicle that is introduced inside the painting booth. This leads to an undesired waste of time which adversely affects productivity. Therefore, to protect the inside surfaces of a painting booth, use of protectors with greater performance in terms of resistance of the protector and its operating time are required, rather than protectors used for other applications that are less demanding in this respect. Furthermore, it is recommendable to periodically replace the protector once it has lost its properties in terms of resistance to high temperatures and to the rest of the atmospheric conditions inside the painting booth.

[0006] Among the protectors currently used to protect surfaces inside painting booths, chemical products that are applied to the surface to be protected are known in the prior art. These chemical products usually create a protective film which later has to be re-rolled using another chemical product. Some known chemical products or gels are soluble in water so they can be re-rolled via dissolution with the help of a sponge or a pressure jet. There are also paints that can be pulled off, which are used as temporary protection in painting booths and later need to be removed. Generally speaking, these chemical products offer limitations due to their excessive cost and to the fact that their application or re-rolling is difficult and time-consuming, causing subsequent time losses in production.

[0007] Another alternative known in the prior art for the protection of surfaces inside painting booths is the use of self-adhesive plastic. This self-adhesive plastic is usually large and is therefore bulky and difficult to operate as it requires some kind of roller or auxiliary tool to position it on the surfaces inside the painting booth. Another drawback of this alternative is that the adhesive of this type of protector tends to leave a residue on the surface to be protected once it has been re-rolled.

[0008] In short, today's most commonly used systems to protect surfaces inside painting booths are inappropriate as they are costly or slow or complex to use.

[0009] A goal of the invention is an alternative protector for surfaces other than those currently used during painting or other surface treatments and which is easy to use. A goal of the invention is also to provide a protector whose replacement is simple and rapid. Furthermore, at least one embodiment of the invention must be suitable for the protection of surfaces inside a painting booth, like those commonly used at vehicle body shops.

Brief Description of the Invention

[0010] The object of the invention is a protector to mask and protect walls, floors or other surfaces during painting

or other surface treatments. The protector comprises a protective element intended to mask a surface to be protected and at least one fixing element that enables the protector to be secured to the surface and that extends in a first direction. The protector as per the invention presents the following features: the protective element consists of a set of at least two or more sheets which are connected to the fixing element at a first peripheral side of these sheets; the sheets also have an opposing second peripheral side which remains free, or in other words, unconnected to the fixing element; furthermore, the sheets are laid out parallel to one another so that when the fixing element is secured to the surface, the sheets are laid one on top of another in a second direction. In addition, the sheets are individually separable from the fixing element.

[0011] Thus, the invention offers a protector with multiple protective, the protector being reusable as it allows using each of the sheets individually and consecutively. Each sheet can be removed, once it has deteriorated or lost its protective qualities, without the need to remove the entire protector and replace it with another. To do so, just remove, pull off or separate each sheet from the rest of the protector after its use. Separation can be carried out easily and quickly, either manually or with the help of a cutter or auxiliary tool. In this way, having multiple sheets extends the useful life of the protector compared with known protectors consisting of a plastic with incorporated masking tape. On the other hand, the re-use of the protector as defined heretofore also involves product cost savings compared with the use of multiple units of a plastic with masking tape.

[0012] In a particularly beneficial embodiment of the protector, one or several of the protective element sheets have a scored or pre-cut area which is located in an area adjacent to the first peripheral side and which extends along the first direction. This pre-cut area facilitates the separation of each sheet after its use, minimising the time required for the preparation of the protector for a new use.

[0013] Furthermore, the protector as per the invention is extremely beneficial when it is used to mask surfaces inside a painting booth. On one hand, the presence of multiple sheets allows for the protector to remain in place inside the painting booth during consecutive treatments on various vehicles, without the need to fully replace the protector each time a new vehicle enters the painting booth for treatment. In addition, the time required to replace each sheet is minimised thanks to the presence of the pre-cut area. Therefore, the protector as per the invention provides a simple and inexpensive alternative to known products that are commonly used with a protective purpose in this type of painting booths.

[0014] In other embodiments of the protector, the fixing element includes an adhesive part to facilitate the securing of the protective element to the surface to be masked and the sheets are individually folded whilst being rolled in a reel. With these characteristics and presentation method, the protector is easily installed on the surface.

To install it, just attach the adhesive part of the fixing element as the protector is unrolled over the surface. A portion or strip of the protector is then cut to the desired size in accordance with the width of the surface a mask.

Once the protector has been positioned on the surface and cut to the desired size, it is unfolded to cover the surface in a longitudinal direction, from the first accessible sheet of the protective element.

[0015] For all of the aforementioned advantages, the protector as per the invention minimises the time required for its positioning and replacement compared with conventional protectors commonly used in painting booths. Therefore, the use of the protector of the invention inside painting booths helps to minimise installation and maintenance times, hence saving costs and increasing productivity.

Brief Description of the Figures

[0016] The details of the invention can be seen in the accompanying figures, which do not intend to limit the scope of the invention:

- Figure 1 shows a perspective of an embodiment of the protector as per the invention with the sheets of the protective element folded and rolled up to form a reel.
- Figure 2 shows a perspective of the protector of Figure 1, shown partially unrolled.
- Figure 3 shows a perspective of a strip of the protector of Figure 1, once it has been cut from the reel to be placed on the surface to be protected and once the outermost sheet of the strip has been unfolded.
- Figure 4 shows an enlarged view of the protector of Figure 1.

Detailed Description of the Invention

[0017] The invention relates to a protector to mask and protect floors, walls or other surfaces during painting or other surface treatments. Figure 1 shows a perspective of an embodiment of the protector, conveniently presented in a roll or reel for handling and sale. Figure 2 shows a perspective view of the protector in Figure 1 partially unrolled. As can be seen in the figures, the protector (1) comprises a protective element (2) intended to mask a surface (3) to be protected, and at least one fixing element (4) which enables the protector (1) to be secured to this surface (3). The fixing element (4) is connected to the protective element (2) and extends along the protector (1) initially in direction A, as can be seen in Figure 2. Figure 3 shows a perspective of a portion or strip (5) of the protector (1) of Figure 1, once this strip (5) has been cut from a reel (6) to be laid on the surface (3) to be masked. As can be seen in Figure 3 and in greater detail in Figure 4, the protective element (2) comprises a set of two or more sheets (7). These sheets (7) are connected to the fixing element (4) at a first peripheral side (8) of

the sheets (7) and have an opposing second peripheral side (9) which remains free. In the embodiment shown in the figures, the protective element (2) specifically includes four sheets (7), which are connected to the fixing element (4) only by the first peripheral side (8). As can also be seen in Figures 3 and 4, the sheets (7) are arranged in parallel so that when the fixing element (4) is secured to the surface (3), the sheets (7) are placed over each other in a second direction T, whereby this direction is transversal to the sheets (7), as follows: a first sheet (7) is placed between the surface (3) and the rest of the sheets (7), when the fixing element (4) is secured to the surface (3), and the rest of the sheets (7) are placed on top in parallel in accordance with the transversal direction T. Furthermore, sheets (7) are individually separable from the fixing element (4) so that, as previously explained in this document, they can be used individually for consecutive uses of the protector (1).

[0018] Preferably, at least one of the sheets (7) has a scored or pre-cut area (10) which is located in an area adjacent to the first peripheral side (8) and extends along direction A. The pre-cut area (10) serves as a guide and facilitates the removal or separation of the sheet (7) after its use. In the embodiment shown in the figures, all four sheets (7) have a pre-cut area (10).

[0019] In other embodiments of the protector, any sheet can optionally have a pre-cut area or not. For example, in a second embodiment of the protector (1) as per the invention (not shown in the figures, as it shares the rest of the characteristics with the embodiment shown) one of the sheets (7) of the protective element (2) does not include a pre-cut area (10). This sheet (7) without a pre-cut area (10) is preferably the innermost sheet (7), or in other words, the sheet (7) that is laid between the surface (3) and the rest of the sheets (7) when the fixing element (4) is secured to the surface (3) or, in other words, the sheet (7) that is the last to be removed. The main advantage of eliminating the pre-cut area is that it saves costs in the manufacture of the sheets. Other embodiments of the protector, other than that shown in the figures, have sheets without a pre-cut area, for example, to impede the involuntary removal of the sheets as a result of pulling or any other unforeseen or undesired circumstance. The sheets without a pre-cut area can simply be separated from the protective element manually or using an auxiliary tool, such as, for example, a cutter.

[0020] Optionally, the fixing element (4) of the protector comprises an adhesive part (11) to facilitate the simple and quick securing of the protective element (2) to the surface (3). In the protector shown in the figures, the adhesive part (11) is arranged on an outer side (12) of the fixing element (4) and extends in the direction A. In this way, as the protector (1) in Figure 1, which is rolled or reeled with the adhesive part (11) outwards, is rolled as shown in Figure 2, the adhesive part (11) of the fixing element (4) becomes attached to the surface (3). The protector optionally has a handle (13), which protrudes from the lower part of the reel (6), to unroll the protector

(1) easily. Once the protector (1) has been unrolled, the strip (5) is cut to the necessary width in accordance with the surface (3) to be masked. The adhesive part (11) is oriented in the transversal direction T, in order for the protector (1) to become appropriately secured to the surface (3).

[0021] The sheets (7) may also optionally be individually folded in a longitudinal direction L, along the second peripheral side (9) and, simultaneously, the sheets (7) are initially rolled around the vertical shaft of the reel (6) as per this longitudinal direction L. Therefore, as can be seen in Figure 3, once the protector (1) has been unrolled, secured to the surface (3) and cut, the outermost sheet (7) is then unfolded in order to cover the surface (3) in the longitudinal direction L. In this way, the protector (1) can mask a surface of the same width as the width of the strip (5) that has been cut and of the same height as the length of the sheets (7) once they have been unfolded. Among other uses, the protector (1) as per the invention is designed to allow the masking of a vertical surface, such as, for example, the walls of a painting booth, using multiple separable and disposable sheets (7) for individual and consecutive use.

[0022] Other embodiments are also contemplated in which the number of sheets (7) of the protective element (2), the length of the sheets (7) when unfolded, the number of folds or folding layers of the sheets (7) or the total length of the reel (6) of protector (1) is different.

[0023] To adapt to high temperatures and other conditions inside the painting booths used in the automotive sector, the fixing element (4) may optionally be rice paper adhesive tape. The choice of this type of fixing element (4) lies in its good properties in terms of resistance to high temperatures, ease of use and adaptation to curves. Furthermore, the rice paper adhesive tape hardly leaves any residue on the masked surfaces and offers good adherence.

[0024] Other embodiments are also considered in which a different type of adhesive is used, for example silicone, thermo-seals. Further embodiments are contemplated in which the layout of the adhesive part is different, provided that it allows for the appropriate adhesion of the fixing element (4) on the surface (3) to be masked.

[0025] Optionally, and with the same objective of being suitable for use inside a painting booth, the sheets (7) are made out of a special plastic, preferably HDPE or High Density Polyethylene, suitable for use inside painting booths. The choice of this material lies in its properties in terms of its excellent thermal and chemical resistance, good resistance to impact, flexibility, lightness and processing by the shaping methods commonly used in the thermoplastics industry. Therefore, the sheets (7) of the protector (1) in the embodiment of the figures, present a thermal resistance capable of withstanding temperatures of at least 150° C whereby each deployed sheet (7) can remain inside the painting booth for approximately 1 week.

[0026] Furthermore, the sheets (7) of the protector (1)

are also optionally subject to corona treatment. It is known that the sheets, films and other plastic objects have impermeable surfaces (non-porous) and are chemically inert, whereby the electrical voltage is usually low. Therefore, the adherence capacity of this plastic is also usually low. The corona treatment is a known process based on the electric phenomenon of the same name. It is often used in diverse sectors of industry, for example, to increase the energy of sheets made out of plastic, paper, metal or other materials in order to increase the permeability and adherence of these sheets. In this way, the corona treatment gives the sheets (7) of the protector (1) an electrostatic charge that keeps them remain folded, without the need for additional securing elements, and which also facilitates their adhesion to the surface (3) to be masked once they have been unfolded.

[0027] Optionally, the sheets (7) are made out of at least two materials of different characteristics in terms of density, composition and/or surface treatment. This feature offers the advantage of using a single protector to mask a surface that needs to be submitted to different treatments, each of which requires a conventional protector with different characteristics.

[0028] Embodiments of sheets (7) of different densities, microns, materials other than plastic, with other treatments and/or qualities, etc. are also contemplated.

[0029] In summary, the invention offers an advantageous product for the protection and maintenance of painting booths or other areas, during the application of treatments consisting of the application of paint, varnish, lacquer, resins or other industrial products, representing an interesting product for the automotive sector, construction and other industries.

Claims

1. Protector (1) to mask floors, walls or other surfaces during painting or other surface treatment tasks, which comprises a protective element (2) intended to mask and protect a surface (3), and at least one fixing element (4) that enables the protector (1) to be secured to the surface (3) and which extends in a first direction, **characterised in that:**

- the protective element (2) comprises a set of at least two sheets (7) that are connected to the fixing element (4) at a first peripheral side (8) of said sheets (7) and that have an opposing second peripheral side (9) which remains free,
- the sheets (7) are arranged in parallel, and the sheets (7) are arranged one on top of the other in a second direction when the fixing element (4) is secured to the surface (3), and
- the sheets (7) are individually separable from the fixing element (4).

2. Protector (1), according to claim 1, **characterised**

in that at least one of the sheets (7) has a pre-cut area (10) which is located in an area adjacent to the first peripheral side (8) and extends in said first direction.

3. Protector (1), according to claim 2, **characterised in that** all of the sheets (7) are fitted with a respective pre-cut area (10).

4. Protector (1), according to claim 2, **characterised in that** only one sheet (7) has a pre-cut area (10), whereby this sheet (7) is the one laid between the surface (3) and the rest of the sheets (7) when the fixing element (4) is secured to this surface (3).

5. Protector (1), according to claim 1, **characterised in that** the fixing element (4) comprises an adhesive part (11) which extends in the first direction and is oriented facing the second direction.

6. Protector (1), according to claim 5, **characterised in that** the fixing element (4) is rice paper adhesive tape.

7. Protector (1), according to claim 1, **characterised in that** the sheets (7) are individually folded in a longitudinal direction along their second peripheral side (9), and **in that** the set of sheets (7) is rolled up around a vertical axis of the protector (1) in said longitudinal direction.

8. Protector (1), according to claim 1, **characterised in that** the sheets (7) are made out of high density polyethylene and are subjected to a corona treatment.

9. Protector (1), according to claim 1, **characterised in that** the sheets (7) are made out of at least two materials of a different nature in terms of density, composition and/or surface treatment.

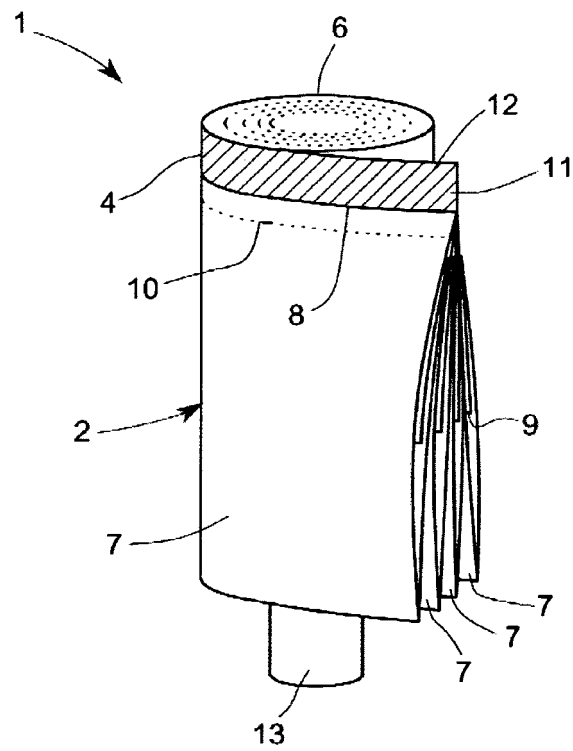


FIG.1

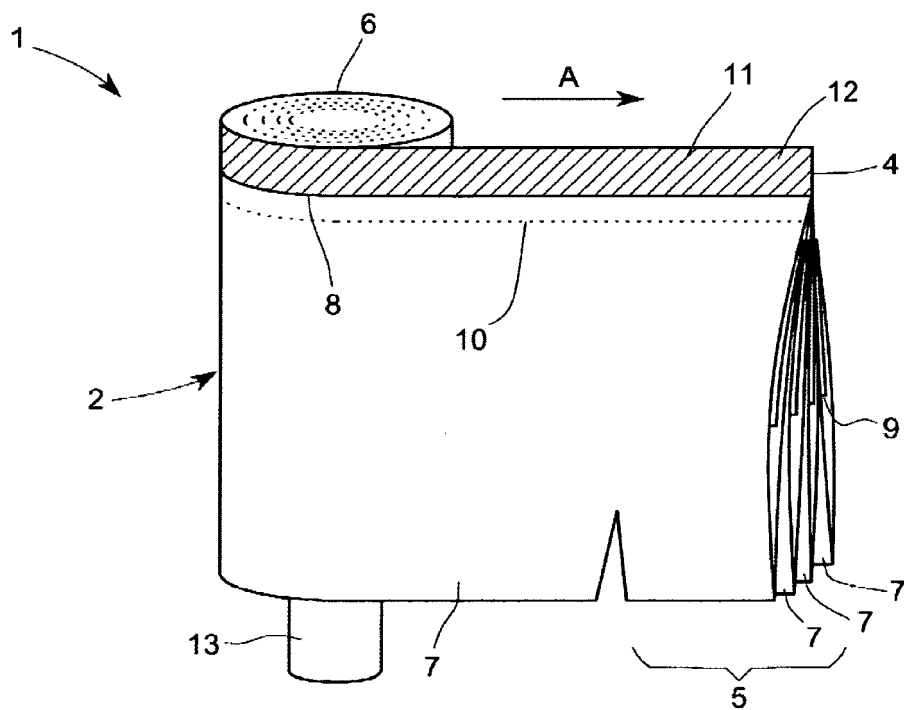
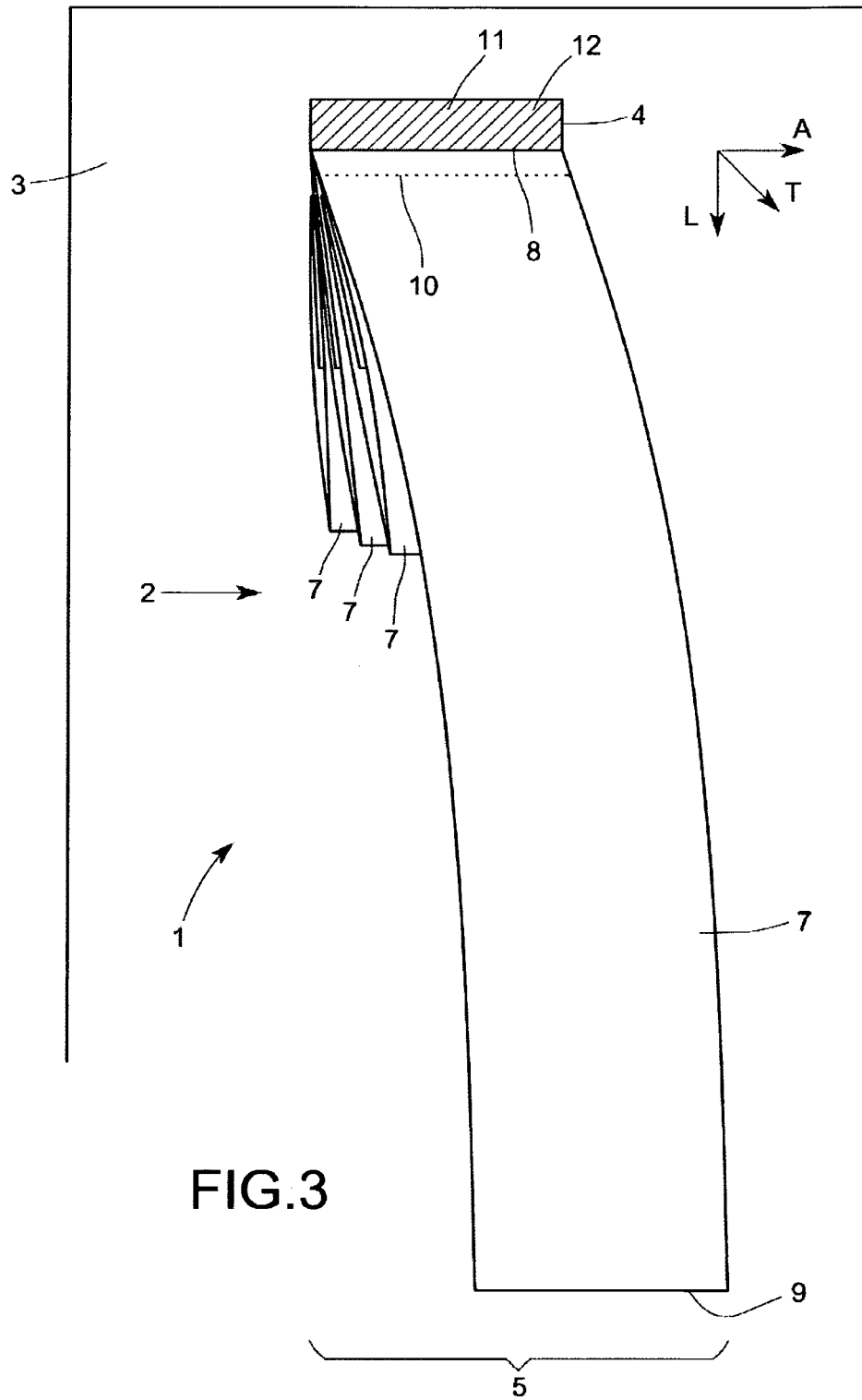


FIG.2



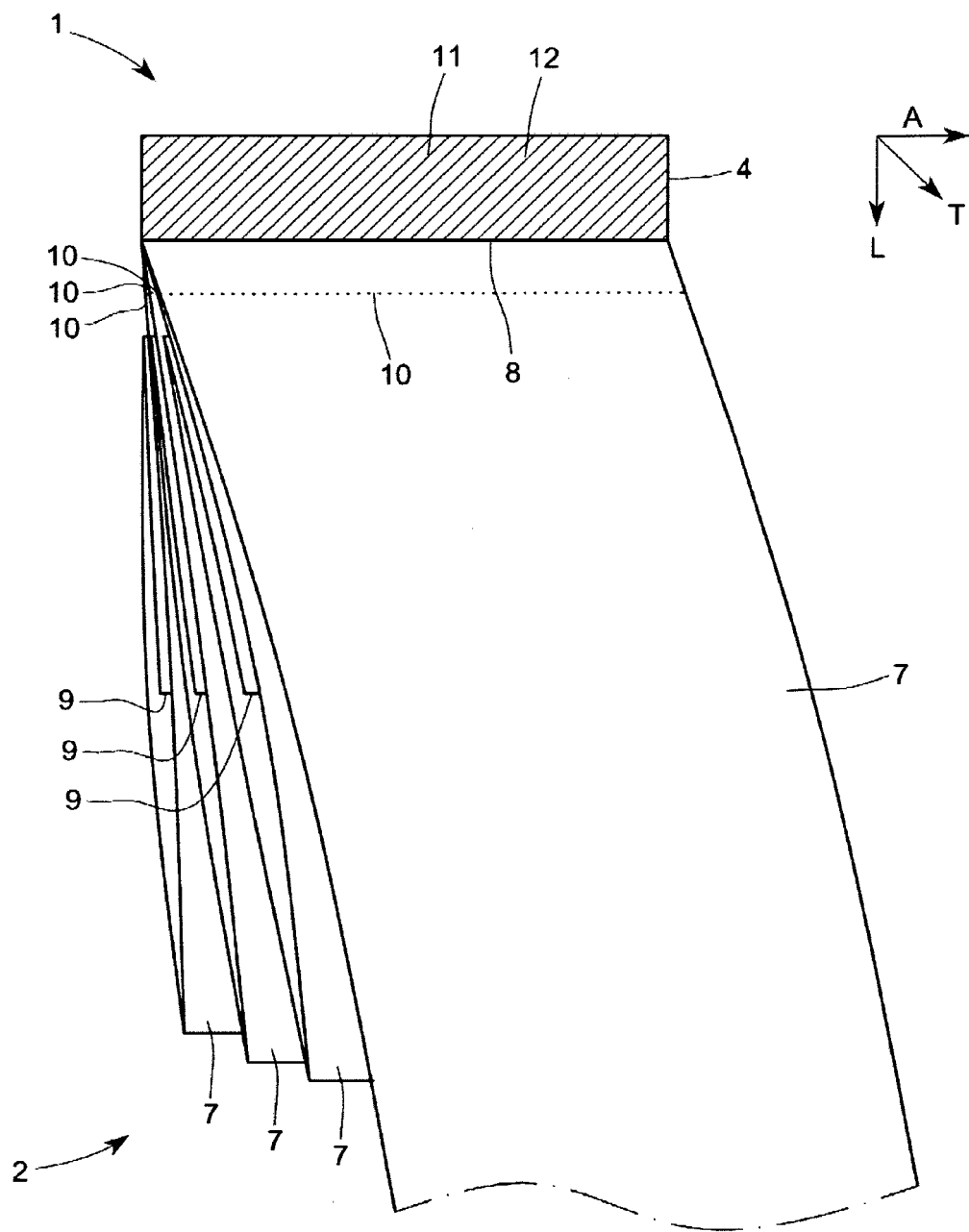


FIG.4

INTERNATIONAL SEARCH REPORT

International application No

PCT/ES2015/070618

A. CLASSIFICATION OF SUBJECT MATTER

INV. B05B15/04

ADD. B05B15/12

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)

B05B

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 practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 2002/122936 A1 (NICKEL OLIVER [DE]) 5 September 2002 (2002-09-05)	1,5,6,8, 9
Y	paragraph [0040] - paragraph [0041]	2,3,7
A	figures 1-3	4

X	US 2004/001932 A1 (KRAUSE ROBERT D [US] ET AL) 1 January 2004 (2004-01-01)	1,5,6
Y	paragraph [0020] - paragraph [0023]	2,3,7-9
A	paragraph [0026] - paragraph [0028] figures 1,2,3	4

Y	US 2010/236475 A1 (BARTUSIAK JOSEPH T [US]) 23 September 2010 (2010-09-23)	2,3
A	paragraph [0002] paragraph [0034] - paragraph [0036] paragraph [0050] - paragraph [0051] figures 11,12	4

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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

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Name and mailing address of the ISA/

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Roldán Abalos, Jaime

INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	WO 2011/014734 A1 (DONEY DENNIS [US]; HALL MARK [US]) 3 February 2011 (2011-02-03) paragraph [0024] - paragraph [0025] paragraph [0019] - paragraph [0020] paragraph [0024] - paragraph [0025] figures 2,3 -----	1-9

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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