



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
28.10.2009 Bulletin 2009/44

(51) Int Cl.:
B66B 13/30 (2006.01)

(21) Application number: **09075183.5**

(22) Date of filing: **20.04.2009**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK TR**

(30) Priority: **23.04.2008 IT MI20080734**

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(54) **Enbloc kit for a lift**

(57) Kit for a lift plant comprising a lift door shutter, a lift doorpost and a lift door apron, wherein the supporting elements for the movement or the stiffeners used in

the common art till now known are integral with each element since formed by a bending process of the same plate constituting each of said kit elements.

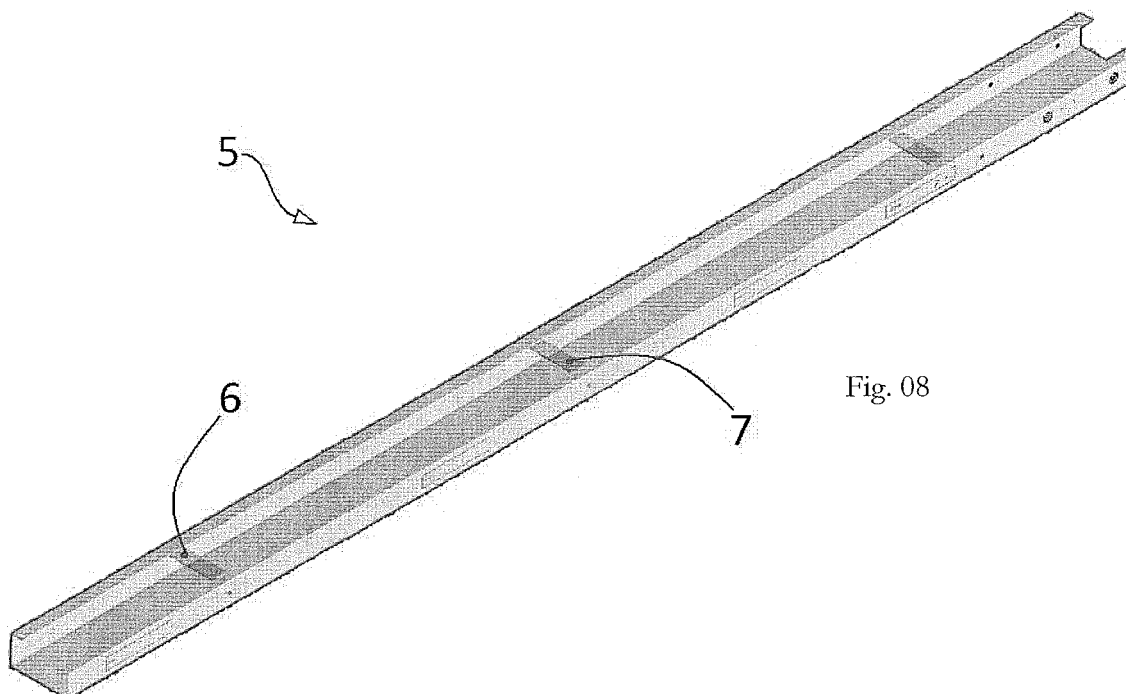


Fig. 08

Description

[0001] The present invention relates to an enbloc kit for a lift, comprising a shutter, a doorpost and a apron of a lift floor door.

[0002] The known movable lift shutters are conventionally hung on the mechanical members necessary for the movement of the same shutter. In case of a movable shutter the horizontal slide is achieved by providing the shutter with carriages and/or runners typically placed at the top and the bottom of the shutter so as to be operatively associated to corresponding guides onto the cross member and the sill of the door. Such method provides therefore that the mentioned movement mechanical members are secured, with suitable techniques such as for example bolting thus surely complicating the manufacturing process and the installation as well both in terms of cost and time.

[0003] The lift movable door shutter is currently manufactured from a plate which, by a bending process, will constitute the frame of the movable shutter to be hung onto the mechanical members necessary for the movement.

[0004] The lift movable door shutter according to the present invention, differently from the known movable shutters, provides within the bending process some steps set apart for the forming, always by bending of the frame plate, of the movement mechanical members.

[0005] Object of the present invention is therefore to provide lift movable door shutter wherein the mechanical members are formed from the frame of said shutter by bending portions of said frame, thus avoiding resorting bolting, again on said frame, movement mechanical members manufactured as elements separate from the same frame. This does not jeopardize the possibility of adding stiffeners in cases considered necessary for particular various and/or normative needs.

[0006] In a manner analogous to the enbloc shutter, with reference to lift doors complying with the fire prevention rules, the manufacturing process of the doorpost according to the present invention provides a bending process through which it is possible to form the plate constituting said doorpost also from the supports necessary for the application of stiffeners commonly used in the manufacturing art and also usable for securing a protection box of the button strip if requested, said supports will be therefore integral with the enbloc doorpost, differently from the prior art doorposts wherein said supports are secured to the doorpost by welding, a choice which obviously involves cost and time drawbacks just seen in the cases of door shutters not according to the present invention.

[0007] Further object of the present invention is therefore to provide lift doorpost provided with supports for stiffener members of the same doorpost integral therewith and formed by a bending process being, eventually, automated.

[0008] Moreover, a lift sill apron according to the

present invention is integral with a strut necessary for complying with the lift rules, which establishes for said apron beneath the floor sill a maximum strain of 10 mm under an applied load of 300 N. The observance of the abovementioned rule was assured in the prior art by the application, with a screw mechanical fastening, of a square, as an element separate from the apron, along with the just known cost drawbacks.

[0009] Further object of the present invention is then to provide a lift sill apron integral with the companion strut, and therefore formed therewith following up a cutting and bending process for predetermined plate portions constituting the aforesaid mechanical members.

[0010] A detailed description of a preferred embodiment of the movable enbloc shutter according to the present invention will be now provided, with reference to the annexed drawings wherein:

fig. 1 is a top view of the front portion of the movable enbloc shutter of the preferred embodiment according to the present invention,

fig. 2 is an enlarged view of a particular mechanical member shown in fig. 1,

fig. 3 is a top view of the rear portion of the shutter in fig. 1,

fig. 4 is an enlarged view of a second mechanical member shown in fig. 3,

fig. 5 is a vertical cross sectional view of the mechanical member in fig. 4,

fig. 6 is a vertical cross sectional, view of the shutter in fig. 1,

fig. 7 is a horizontal cross sectional view of the shutter in fig. 1,

fig. 8 is a perspective view of the enbloc doorpost of a preferred embodiment according to the present invention,

fig. 9 is a cross sectional view of the enbloc doorpost in fig. 8,

fig. 10 is a perspective view of the enbloc apron of a preferred embodiment according to the present invention, and

fig. 11 is an enlarged view of a part of the enbloc apron in fig. 10.

[0011] A movable shutter 1 comprises a frame 2 and a carriage 3, shown in fig. 1, and a runner-holder 4, shown in fig. 3. Said carriage 3 and said runner-holder 4 are designed so as to fit a cross member and a door sill (not shown), respectively, in order to allow the mounting of said movable shutter 1 within the doorpost. In fig. 2 the carriage 3 is shown by a top view where can be seen also the holes necessary to secure a system of mechanical members adapted to rolling in a seat formed within the cross member of the doorpost, and then to the horizontal rolling of the movable shutter 1. Fig. 4 shows, instead, in detail the runner-holder 4 the to which there will be fixed the runner to be engaged in a door sill suitably shaped to house the cross section of said runner fixed

to the runner-holder 4 (fig. 5), thus serving as guide and cross constrain during horizontal rolling of said movable shutter 1.

[0012] It is further possible to see the aforementioned mechanical members 3 and 4 in the vertical cross sectional view of the movable shutter 1 in fig. 6 wherein are visible the plate portions, from which are formed the carriage 3, the runner-holder 4 and the frame 2, the vertical section of which is shown in fig. 7 for full understanding but it is not binding in terms of embodiment of said carriage 3 and said runner-holder 4. The carriage 3 is clearly formed by bending a end portion of the plate constituting said frame 2 over itself. Said end portion of the plate is then further bent so as to obtain surfaces lying on different planes, need which is obviously connected to the particular embodiment of the aforesaid system of mechanical members adapted to rolling and not to the bending process. It is therefore clear that embodiments different from the preferred embodiment just shown can be obtained keeping the typical feature of the enbloc shutter. Therefore the concept of movable enbloc shutter and the manufacturing process thereof according to the present invention can be applied also to a lift doors having three, four, six shutters both with middle closing and side closing with telescopic shutters.

[0013] It is however possible to stick and/or rivet stiffeners in cases wherein it is considered necessary.

[0014] In fig. 8, a doorpost 5 is shown, in a perspective view, together with three supports 6 for stiffeners 7. The doorpost 5 is formed by bending a plate till a single body is formed having an open section and provided, at three positions regarding the particular embodiment shown, with portions of plate, constituting the doorpost 5, extending from one side of the open section towards the opposite side of the same section. In such manner the aforesaid portions of plate constitute the supports 6, further provided with holes for a first mechanical fastening of said stiffeners 7 thereon. Corresponding holes are formed on the side opposite in respect of the supports 6 for a second mechanical fastening of the stiffeners 7, which may be constituted, for example, by plates having suitable thickness for assuring the mechanical strength required by the rules regarding the lift plants. As shown in fig. 9, at the application positions of the stiffeners 7 the cross section of said doorpost 6 is closed thus giving the whole structure a grater stiffness.

[0015] With reference now to fig. 10, a perspective view shows an apron 8 of a lift door provided at the lower left and right corners with struts 9, formed by shearing of the plate constituting the whole apron. Said struts 9 replace the striker plates provided by the prior art, that is some squares as elements separate from the remaining apron 8 and fixed, for example, by screws. Even in this case, as for the shutter and the doorpost of a lift door, the presence of separate elements results obviously in difficulties both in terms of manufacture and installation of said apron 8. The embodiment shown in figs. 10 and 11, indeed, allows the installer for arranging beforehand

said struts 9 by shearing of a plate stripe connecting the free end of said strut 9 to the body of the apron 8 and by bending of the strut 9 around its end integral with the body of the apron 8.

Claims

1. A lift plant kit, comprising:

- (i) an enbloc shutter (1) provided with supports (3, 4) for movement systems of said enbloc shutter (1),
- (ii) a doorpost (5) provided with supports (6) for stiffeners (7), and
- (iii) a door apron (8) provided with struts (9)

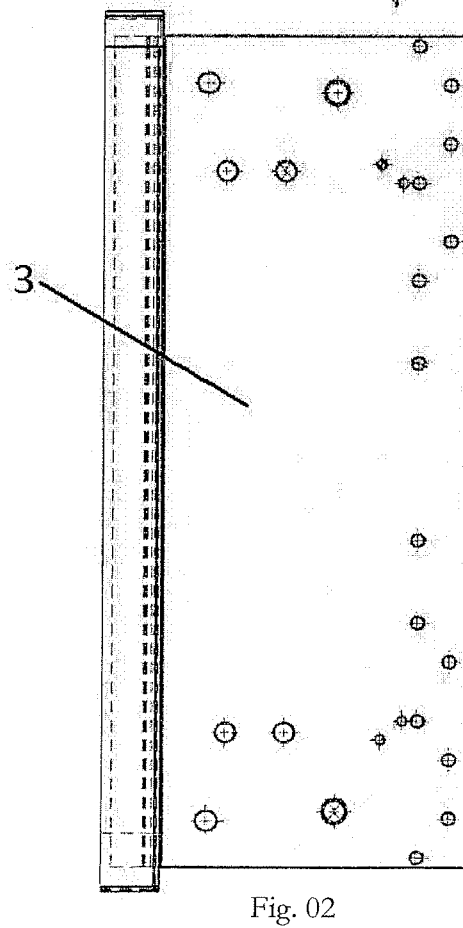
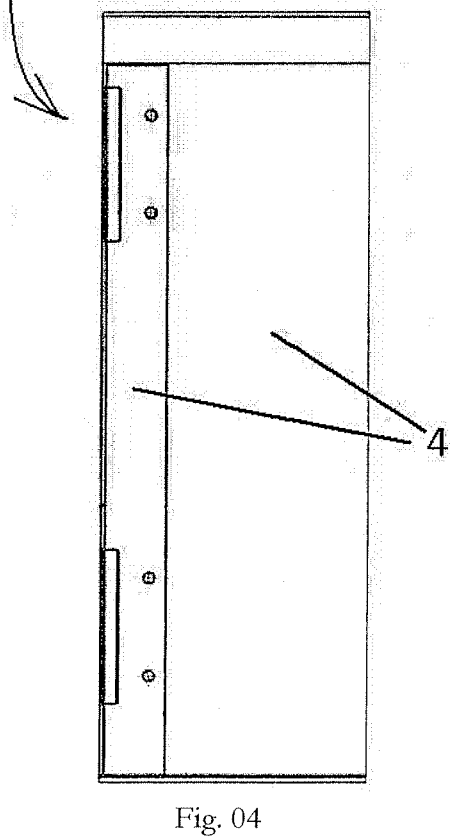
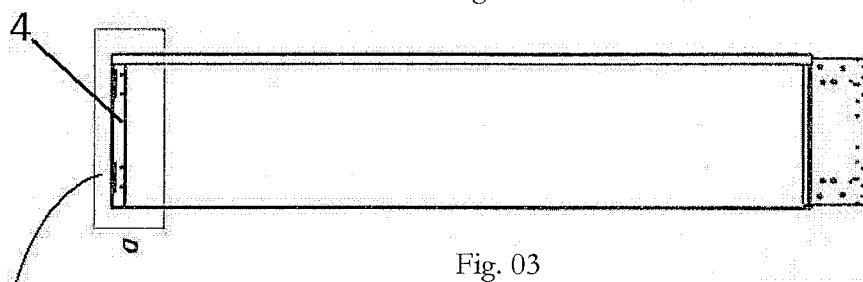
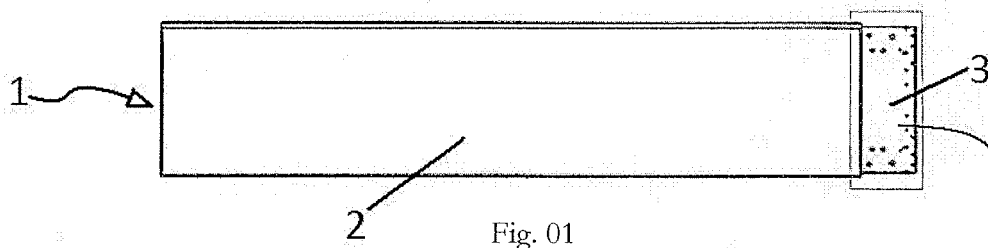
characterized by the fact that said supports (3, 4, 6) and said struts (9) are formed from the plate constituting said enbloc shutter (1), said doorpost (5) or said door apron (9), respectively.

2. The lift plant kit according to claim 1, wherein said supports (3, 4, 6) and said struts (9) are formed by a punching and bending process of the plate constituting said enbloc shutter (1), said doorpost (5) or said door apron (8), respectively.

3. The lift plant kit according to claim 2, wherein said bending process is a manual or automated process.

4. The lift plant kit according to claim 1, wherein said movement systems of said enbloc shutter (1) are carriages or runners.

5. The lift plant kit according to claim 1, wherein said enbloc shutter (1) has stiffeners formed onto said supports (3, 4).



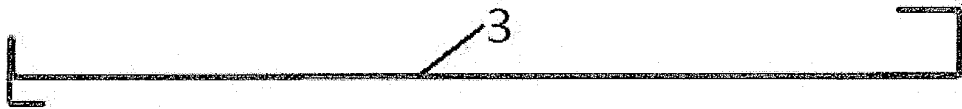


Fig. 07

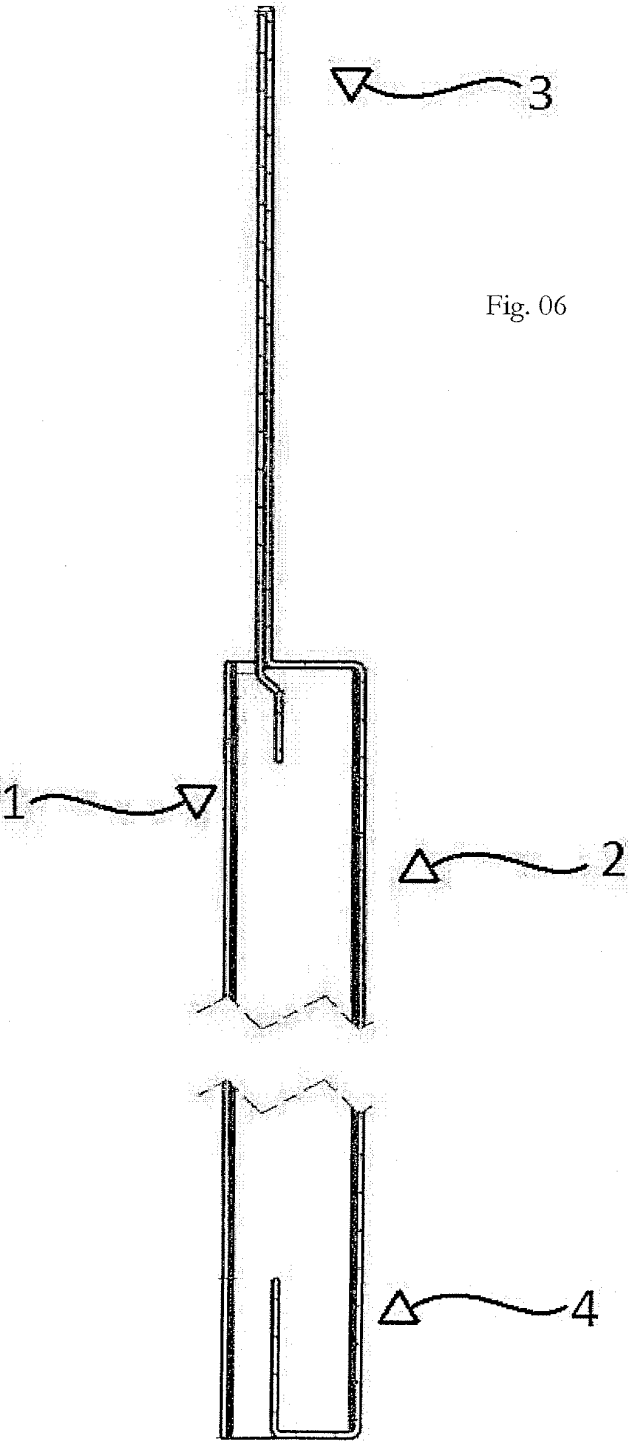


Fig. 06

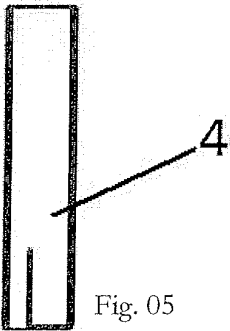


Fig. 05

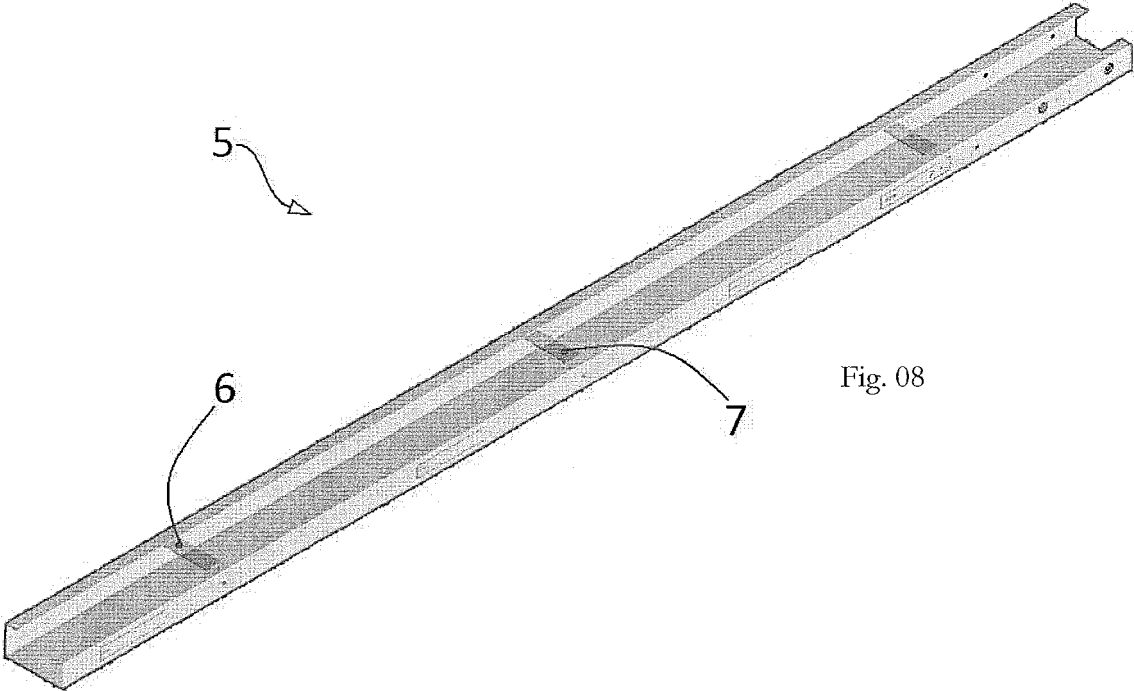


Fig. 08

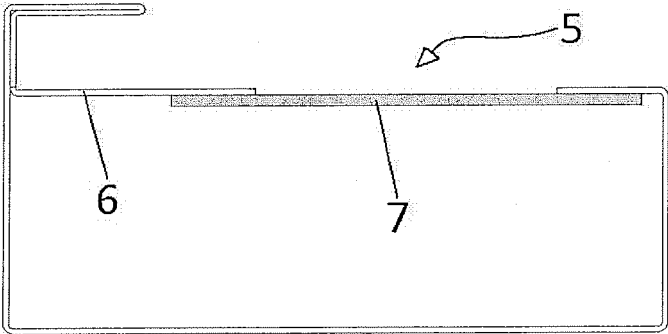


Fig. 09

Fig. 10

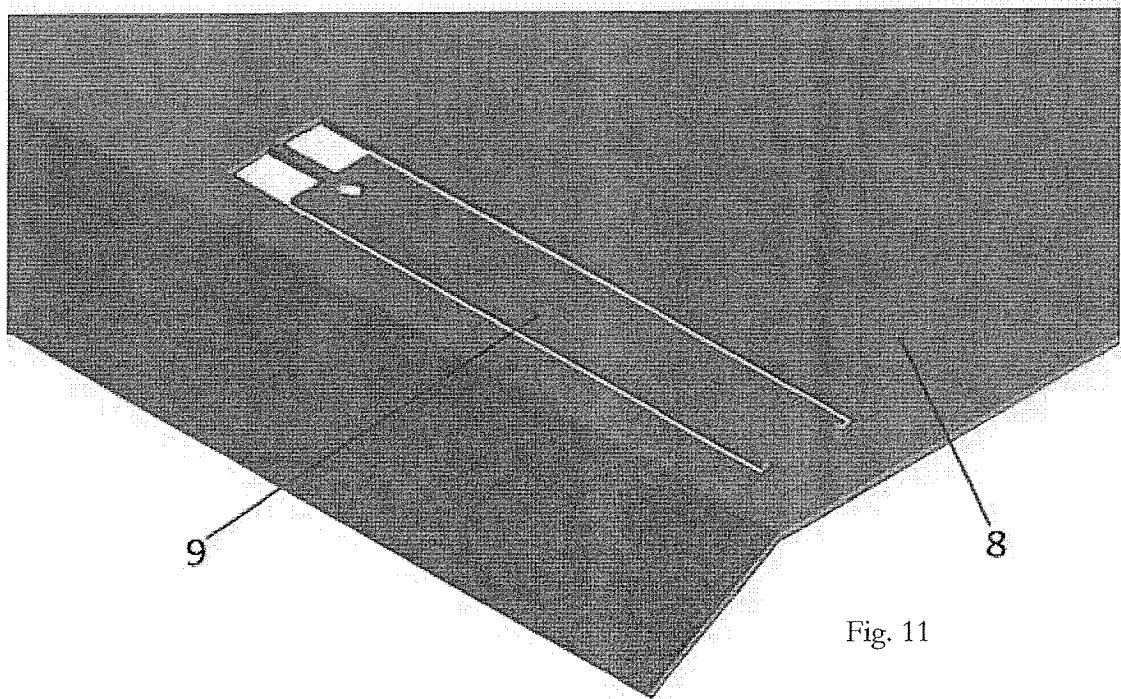
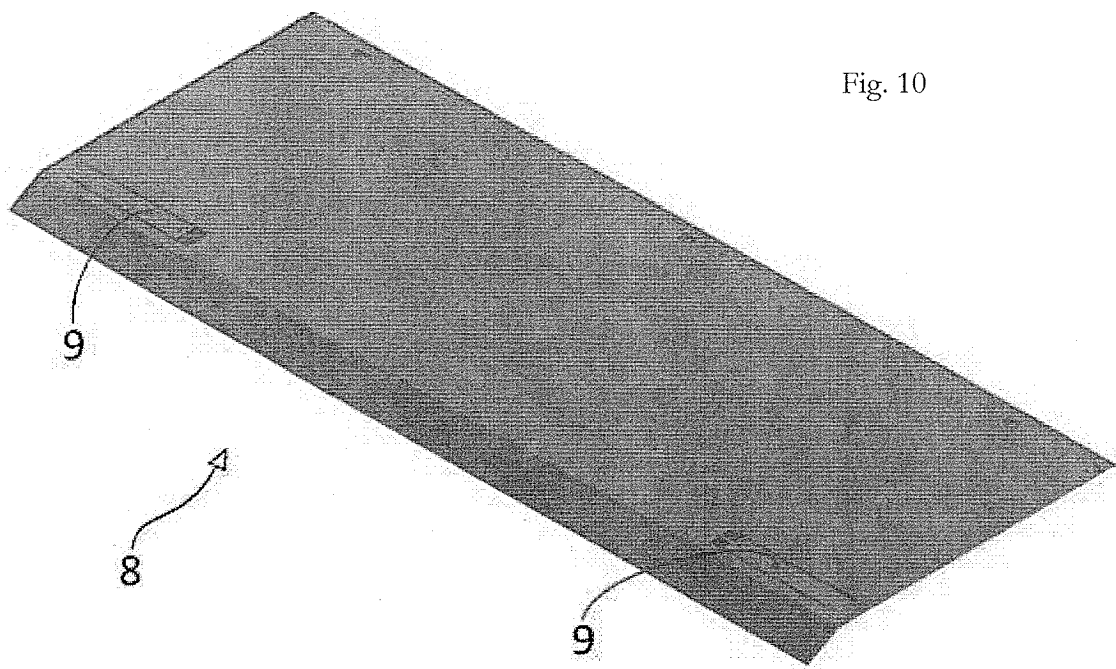


Fig. 11