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(72) Inventor: **Gernay, Thierry**  
**9790 Wortegem-Petegem (BE)**

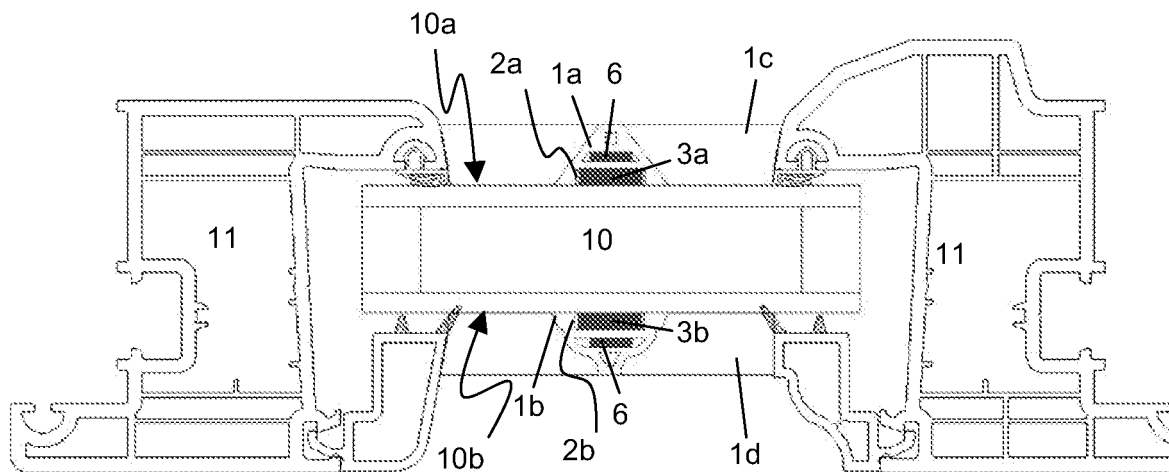
(74) Representative: **Ostyn, Frans**  
**K.O.B. NV**  
**Kennedypark 31 c**  
**8500 Kortrijk (BE)**

(71) Applicant: **Geco NV**  
**8570 Anzegem (BE)**

(54) **Set of at least two georgian bars with magnets**

(57) The invention relates to a set of at least two Georgian bars (1, 1a, 1b, 1c, 1d), wherein a first Georgian bar (1a, 1c) of this set is provided to be placed into a fixed position onto an exterior side (10a) of a panel (10) of a window or a door, and a second Georgian bar (1b, 1d)

of this set is provided to be placed into a fixed opposite position onto the other exterior side (10b) of this panel (10), wherein the said Georgian bars (1, 1a, 1b, 1c, 1d) are provided to be placed into the opposite fixed positions by means of magnetic attraction.



**FIG. 3**

## Description

**[0001]** The invention relates to a set of at least two Georgian bars, wherein a first Georgian bar of this set is provided to be placed into a fixed position onto an exterior side of a panel of a window or a door, and a second Georgian bar of this set is provided to be placed into a fixed opposite position to the other exterior side of the panel of the window or door.

**[0002]** Georgian bars are mostly used on the glass panels of a window or door, but can also be used on panels made of other materials such as wood, PVC, aluminium, etc.

**[0003]** The origin of Georgian Bars dates back to the Middle Ages when flat glass was made and the current procedure for making float glass was not known. This also meant that larger panes of glass at that time could not be produced. This explains the use of smaller glass sizes of single glass within a window with joining elements e.g. lead, iron, other metals or thick wood.

**[0004]** The introduction of double glazing, however, resulted in necessary changes in techniques to obtain the intended effect, namely the reproduction of the old cross casings. By reproducing the cross casings by means of using smaller glass sizes as described above using wood and steel, and more recently raw materials such as PVC, polyurethane or aluminium for the joining elements, the intended effect can also be produced for double glazing.

**[0005]** However, applying this procedure is rather expensive. With double glazing, not only is there the cost of the appropriate profiles used in the window/door, but also increased glass volume for the separate glass slats. Moreover, the glass becomes more and more expensive as double glazing is sold by the manufacturers at a minimum area of 0.5 m<sup>2</sup> while the maximum used by the fabricator rarely exceeds 0.2m<sup>2</sup>.

**[0006]** Due to the expense of this procedure, despite the excellent end result, it is rarely used.

**[0007]** Manufacturers do offer an alternative whereby pre-painted Georgian bars are placed in the cavity between the double glazing and consequently the external glass remains untouched.

**[0008]** Although this is a more economical solution, it does have its limitations, namely

- The end result deviates far from the intended effect because of the reproduction cross casings which depict a modern more contemporary looking window / door but which also cheapens the end result. The design of the Georgian Bar is limited and can be chosen with an 18 mm or 26 mm width but both have the same design.
- There are a limited amount of colours offered as standard by the manufacturers which unfortunately is difficult to change. Nowadays, the demand for diverse colours is increasing and glass manufacturers cannot comply with specific requirements unless long delivery periods and much greater costs are

quoted.

- The positioning of Georgian bars between the double glazing of certain glass types, such as layered glass, coloured glass, sun-blinding glass, creates an optical effect changing the colour of the Georgian bars.

**[0009]** An alternative way of applying Georgian bars is to put them in a frame in front of the glass panel of the window / door. This method is used in France and other countries under French influence, but only with wooden windows and doors. Using this method, a separate frame of Georgian bars are made and then the frame is attached to the exterior side of the panel using hinges. A latch is provided to be able to lock the frame in place.

**[0010]** This system has the advantage that the frame can periodically be detached from the panel by means of the hinges / latch to facilitate cleaning. However, this system has the following disadvantages:

- The Georgian bars are attached to the exterior side of the window / door having the disadvantage that the cavity between the double glazing can be observed from inside the building detracting from the effect required.
- The Georgian bars are not stuck to the panel resulting in a risk of 'bowing' because of their small dimensions. The hinges and latch are visible on the outside of the window/door.
- Due to the framework around the Georgian bar, daylight is restricted and of course the frame is an additional cost.

**[0011]** The more frequently used method of attaching Georgian Bars to a window / door is with double sided sticky tape. The Georgian bar can be made of most materials such as wood, PVC, aluminium, steel etc. and should be stuck to both sides of the panel using water and weather resistant adhesive tape. Subsequently the sides of the bar are bordered with silicone. This prevents deterioration by moss, mould or pollution and at the same time is an additional attachment of the bar to the panel.

**[0012]** The disadvantages of this method are the following:

- The double-sided adhesive tape has to be resistant to all weather conditions and is therefore very expensive.
- The attachment of Georgian bars is very labour intensive and requires extreme precision.
- Georgian bars cannot be attached in humid weather conditions as the process must be performed on a dry surface and in a horizontal position. Therefore it becomes necessary to do this at the manufacturers base rather than on site as the windows/doors stand vertically on site and could complicate the handling and/or damage the windows / doors if carried out

there. As a result of this the glass units have to be installed first at the work base and then the Georgian bars applied and then transported to site and thus they become much heavier for handling and transportation. Regulations regarding glazing are becoming more and more rigorous with reference to acoustic, thermal and safety regulations. Glass thickness is increasing (see the European Regulations on Building Products 89/106/CEE) and therefore the panels are heavier. This requires more people for the lifting and movement of the windows / doors on site, thus increasing fitting costs.

- The bordering of the edges of the Georgian bar with silicone requires a professional finish and cannot be done by just anyone. Additionally, as the silicone can be seen clearly on the exterior, the thickness of the silicone has to be totally uniform and matching with the interior side of the glass unit. The application of the silicone and end effect is a regular cause of complaints with customers.
- In all weather conditions, silicone deteriorates in time and consequently requires maintenance and renewal and therefore incurs additional cost.
- The adhesive double-sided tape may eventually discolour and is visible through the glazing from the other side. It is therefore recommended that white or light coloured adhesive tapes should not be used as these become yellow under the influence of UV-radiation. Black tapes are therefore advocated although this colour rarely complies with the colour of the window/door.
- Additionally, by attaching the Georgian bars with an adhesive, they cannot be removed temporarily for cleaning purposes which is a problem that should not be underestimated especially when the window/door consists of very small sections.

**[0013]** The purpose of this invention is to provide Georgian bars that can be placed into a fixed position onto a window or a door panel, whereby the cosmetic effect of the cross casings is as reproductively good as possible and the placement of the bars can be done on site. The aim is to also make it possible to place them easily placeable and also removable especially for cleaning purposes.

**[0014]** This aim of the invention is achieved by providing a set of at least two Georgian bars, wherein a first Georgian bar of this set is provided to be placed into a fixed position onto an exterior side of a panel of a window or a door, and a second Georgian bar of this set is provided to be placed into an opposite fixed position onto the opposite exterior side of the panel of the window or door, wherein the said Georgian bars are provided to be placed into the opposite fixed positions by means of magnetic attraction.

**[0015]** The provision of the Georgian bars according to this invention has the following advantages:

- The Georgian bars according to the invention can be prefabricated in the workplace but can easily be put in place on site, despite adverse weather conditions. This can be done by a novice. This is more cost effective as it means the glass panels (if glass is applicable) can be also inserted on site instead of at the workplace.
- The fabrication of the Georgian bars according to the invention can, contrary to existing Georgian bars, be made by an unqualified person.
- The Georgian bars according to the invention can be attached on site whilst the window is in a vertical position and therefore does not have to be in a horizontal position, reducing the handling time and therefore less expense.
- The Georgian bars according to the invention no longer have to be fixed with double sided adhesive tape nor fixed with silicone which results in a big reduction of man hours (a reduction of up to 20% of the required time) and also in material (up to 50%). At present, the double sided tape can be seen from the other side of the panel and quite often the colour of the tape varies from the colour of the PVC, wood, aluminium etc. which is a disadvantage and not aesthetically pleasing. However with the Georgian bars according to the invention, the magnets are small and the overall effect is much improved when viewed through the glass cavity.
- The Georgian bars according to the invention can be easily detached from the panel in order to clean and the glass panel consequently has a much larger uninterrupted surface which makes cleaning easier.
- The Georgian bars according to the invention more closely resemble the old cross casings as applied in the Middle Ages.
- Complaints about mis-match of colour, colour fading, poor adhesion, poor application of silicone etc. are avoided. Also after a period of time panels may need to be replaced due to perhaps moisture between the glass panels of the unit (a common problem when still under guarantee) or perhaps the panel is broken. The Georgian bars according to the invention can be reused without problem and put in place by an unqualified person, whereas with the Georgian bars according to the state of the art this would be impossible.
- When there is a change of style of the building or doors / windows therein, the Georgian bars according to the invention can simply be detached without the need to change the panel, whereas previously this would have been necessary.

**[0016]** In a preferred embodiment of a set according to the invention, the first and second Georgian bars each are provided with one or more recesses for inserting one or more magnets in such a way that the north pole of a first magnet that is inserted in the first Georgian bar is attracted to the south pole of a second magnet that is

inserted in the second Georgian bar.

**[0017]** In a more preferential embodiment of a set according to the invention, the one or more recesses are provided in the Georgian bars in such a way that the north pole, respectively the south pole of the magnets are adjacent to the panel.

**[0018]** The magnets are preferably made of an alloy of Neodymium (Nd). More preferably they are made of Neodymium (Nd), Iron (Fe) and Boron (B).

**[0019]** By applying such magnets, both poles are attracted to each other with sufficiently large magnetic forces, irrespective of the distance between both exterior surfaces (the air or gas cavity between the exterior surfaces of the panel in section being about 15 to 16 millimetres).

**[0020]** In an advantageous embodiment of a set according to the invention, in order to enlarge the magnetic force of the one or more magnets, approximately with 25 to 35 %, the Georgian bars are provided to insert one or more iron (Fe) elements in the direct presence of one or more of the magnets. Furthermore, the attraction between the magnet and the Fe-counterpiece has the additional advantage that the magnets do not at all have to be attached or stuck into the recess as provided in the Georgian bar, which offers a clear advantage in production, trading and transport of the Georgian bars.

**[0021]** In a more advantageous embodiment of a set according to the invention, the Georgian bars are provided with one or more supplementary chambers which are provided to insert the one or more iron elements.

**[0022]** With respect to the attachment of the Georgian bars, the Georgian bars which are arranged in cross form do not offer any problem to remain in place, as the cross form is supported by the surrounding window and/or door frame.

**[0023]** However, in order to place the first and second Georgian bars horizontally into opposite fixed positions onto the panel of the door or window (or in order words to prevent them from sliding down the panel), in a preferred embodiment of a set according to the invention, one or more sides of the panel near the window or door frame are provided with one or more fixing strips, e.g. made of wood, PVC, aluminium, Plexiglas, single glass, Lexan, etc. which are fixedly attached to the panel, and which are provided to fit in the one or more recesses which are provided for inserting the one or more magnets.

**[0024]** In order to further clarify the characteristics of this invention and to point out additional advantages and particulars, now a more detailed description will follow of two different embodiments of Georgian bars according to the invention, and the principal of double sided magnetic attachment to a panel, here being a double glazing with an air or gas cavity. It may be obvious that nothing of the following description may be interpreted as being a restriction of the protection of the set of Georgian bars according to the invention, demanded for in the claims.

**[0025]** Furthermore, some of these embodiments are discussed in the attached figures, referring, by means of reference numbers to these figures, wherein in:

- *figure 1* a cross section is shown of a first embodiment of a Georgian bar of a set according to the invention;
- *figure 2* a cross section is shown of a second embodiment of a Georgian bar of a set according to the invention;
- *figure 3* a cross section is shown of the principle of double-sided magnetic attachment to double glazing with air or gas cavity with horizontally and vertically positioned Georgian bars of a set according to the invention;
- *figure 4* a partial cross section is shown of the principle of double-sided magnetic sticking to double glazing with air or gas cavity with only horizontally positioned Georgian bars of a set according to the invention.

**[0026]** As shown in figures 1, 2 and 3, the Georgian bars (1) according to the invention are provided with one or more (interior) recesses (2) which are provided for inserting at least one (elongated) magnet (3), in order to place a first and a second Georgian bar (1) in opposite fixed positions onto the glazing (10) of a window or door by means of magnetic attraction.

**[0027]** To place this first and second Georgian bar (1a, 1b) each in a fixed position to the opposite exterior sides (10a, 10b) of the glazing (10) of the window or door, as shown in figure 3, each of these Georgian bars (1a, 1b) is provided in its recess (2a, 2b) with one or more (elongated) magnets (3, 3a, 3b) which are inserted in the recess (2a, 2b) in such a way that for each set of magnets (3, 3a, 3b) the north pole of the first magnet (3a) is oriented to the south pole of the second magnet (3b), such that these two (sufficiently strong) magnets (3, 3a, 3b) attract each other.

**[0028]** These sufficiently strong magnets (3, 3a, 3b) are preferably made of an alloy of Neodymium (Nd), Iron (Fe) and Boron (B). In order to further enlarge the magnetic attraction force of these magnets (3, 3a, 3b), as is shown in figures 1 to 3, one or more iron elements (6) are provided in the direct presence of the magnets (3, 3a, 3b), more particularly in one or more supplementary chambers (4) which are provided in the Georgian bars (1, 1a, 1b).

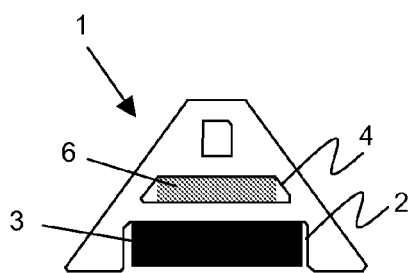
**[0029]** In case, as shown in figure 3, the Georgian bars (1, 1a, 1b, 1c, 1d), are placed in a cross form to the glazing (10) of the window and/or the door (10), the whole is supported by the window and/or the door frame (11), so that no supplementary elements are needed to keep the whole in place. However, in case Georgian bars (1c, 1d) only have to be placed in a fixed horizontal position, as is illustrated in figure 4, it is possible that the Georgian bars (1, 1c, 1d) slide down from the glazing. To solve this problem, one or more fixing strips (5), e.g. strips made of Plexiglas, are stuck to the opposing exterior sides (10a, 10b) of the glazing (10) of the window or the door, in such a way that they fit in the recess(es) (2) of the Georgian bars (1, 1c, 1d) which are provided for inserting the mag-

nets (3, 3a, 3b). However, these fixing strips (5) can also be made of other materials such as wood, PVC, aluminium, single glass, Lexan, etc.

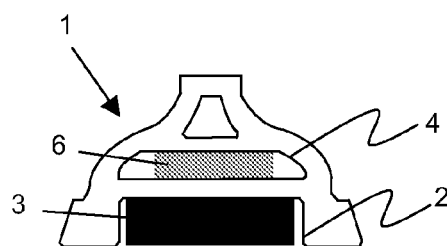
## Claims

1. Set of at least two Georgian bars (1, 1a, 1b, 1c, 1d), wherein a first Georgian bar (1a, 1c) of this set is provided to be placed into a fixed position onto an exterior side (10a) of a panel (10) of a window or a door, and a second Georgian bar (1b, 1d) of this set is provided to be placed into a fixed opposite position onto the other exterior side (10b) of this panel (10), **characterised in that** the said Georgian bars (1, 1a, 1b, 1c, 1d) are provided to be placed into the opposite fixed positions by means of magnetic attraction. 5  
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2. Set according to claim 1, **characterised in that** the first and second Georgian bars (1a, 1c; 1b, 1d) each are provided with one or more recesses (2a, 2b) for inserting one or more magnets (3a, 3b) in such a way that the north pole of a first magnet (3a) that is inserted in the first Georgian bar (1a, 1c) is attracted to the south pole of a second magnet (3b) that is inserted in the second Georgian bar (1b, 1d). 20  
25
  
3. Set according to claim 2, **characterised in that** the one or more recesses (2a, 2b) are provided in the Georgian bars (1, 1a, 1b, 1c, 1d) in such a way that the north pole, respectively the south pole of the magnets (3a, 3b) are adjacent to the panel (10). 30
  
4. Set according to one of the claims 1 to 3, **characterised in that** the magnets (3, 3a, 3b) are made of an alloy of Neodymium (Nd). 35
  
5. Set according to claim 4, **characterised in that** the magnets (3, 3a, 3b) are made of Neodymium (Nd), Iron (Fe) and Boron (B). 40
  
6. Set according to one of the claims 1 to 5, **characterised in that** in order to enlarge the magnetic force of the one or more magnets (3, 3a, 3b), the Georgian bars (1, 1a, 1b, 1c, 1d) are provided to insert one or more iron (Fe) elements (6) in the direct presence of one or more of the magnets (3, 3a, 3b). 45
  
7. Set according to claim 6, **characterised in that** the Georgian bars (1, 1a, 1b, 1c, 1d) are provided with one or more supplementary chambers which are provided to insert the one or more iron elements (6). 50
  
8. Set according to any one of the preceding claims, **characterised in that** in order to place horizontally lying first and second Georgian bars (1, 1a, 1b, 1c, 1d) into fixed opposite positions onto the panel (10) 55

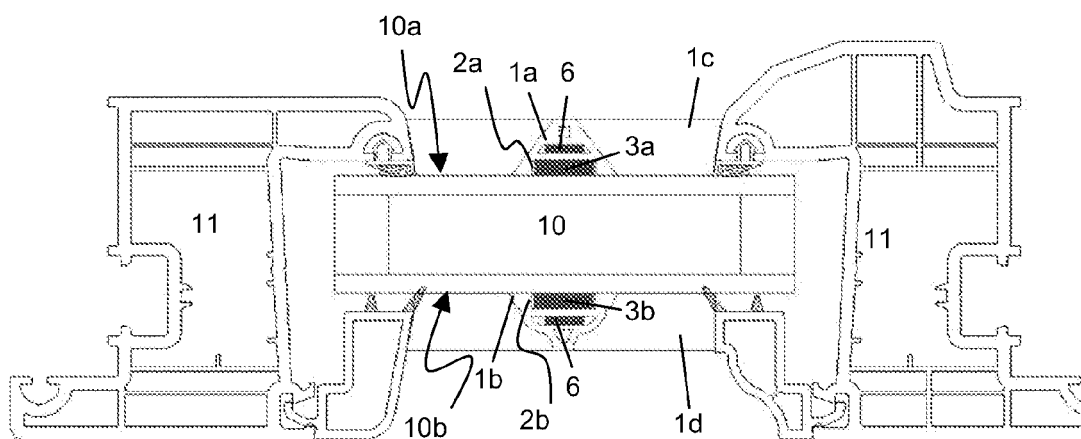
of a window or a door, one or more sides of the panel (10) near the window or door frame are provided with one or more fixing strips (5) which are fixedly attached to the panel (10), and which are provided to fit into the one or more recesses (2, 2a, 2b) which are provided for inserting the one or more magnets (3, 3a, 3b).



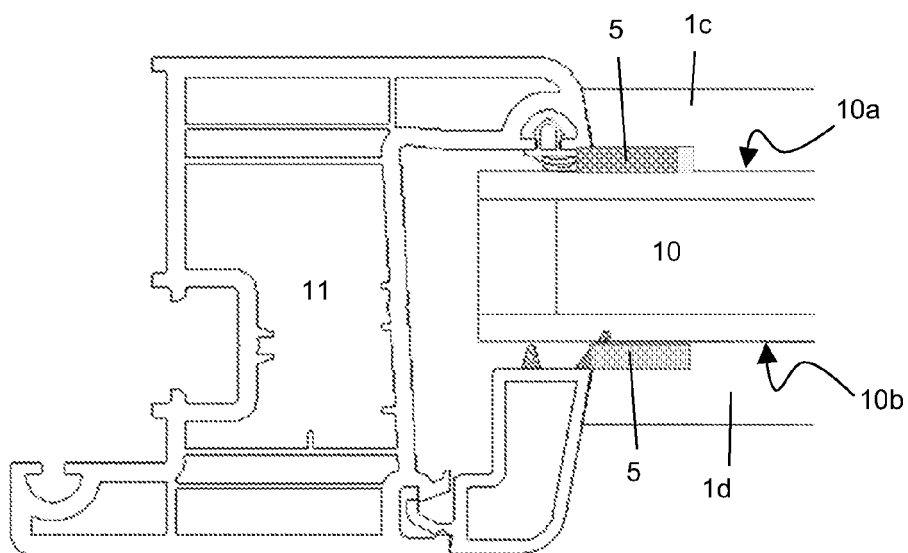
**FIG. 1**



**FIG. 2**



**FIG. 3**



**FIG. 4**



European Patent  
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# EUROPEAN SEARCH REPORT

Application Number  
EP 07 10 2588

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 20 2004 004705 U1 (OSWALD KLAUS [DE]; RIEDIGER KLAUS [DE]) 27 May 2004 (2004-05-27) * paragraph [0004]; claims 1-3; figures 1-3 *	1-3,6-8	INV. E06B3/68
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			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 April 2007	Examiner Kofoed, Peter
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 10 2588

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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26-04-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82