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Kim

(54) **GRATING**

(76) Inventor: **Sang-don Kim**, Seoul (KR)

Correspondence Address:
IPLA P.A.
3580 WILSHIRE BLVD., 17TH FLOOR
LOS ANGELES, CA 90010 (US)

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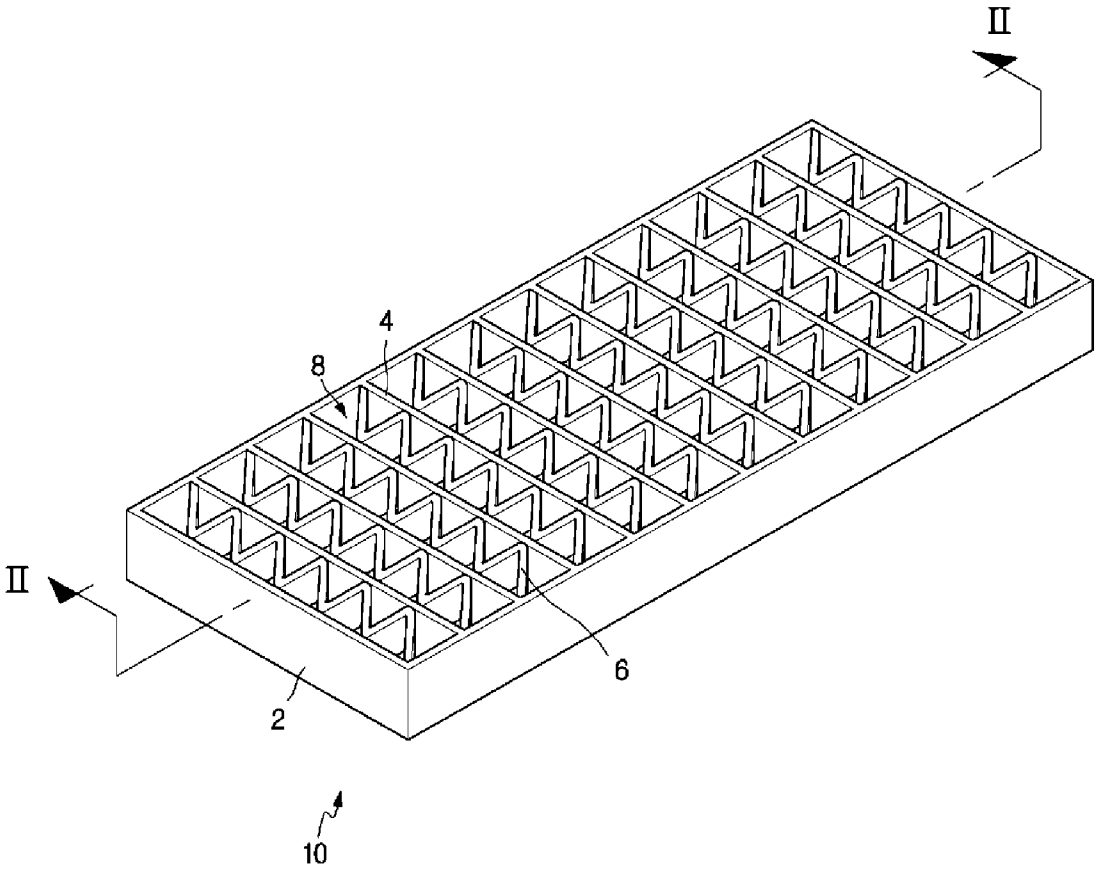
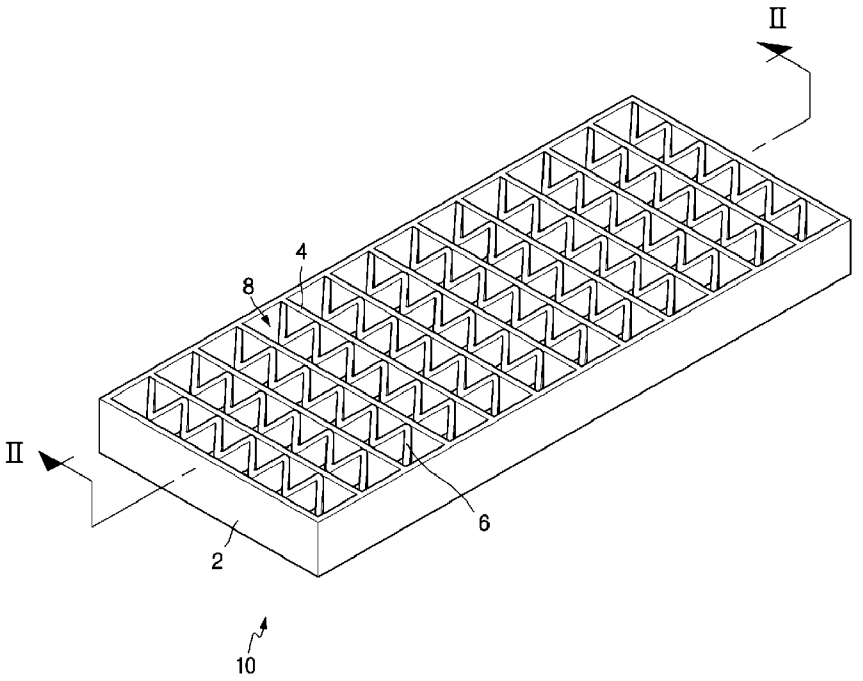
(57) **ABSTRACT**

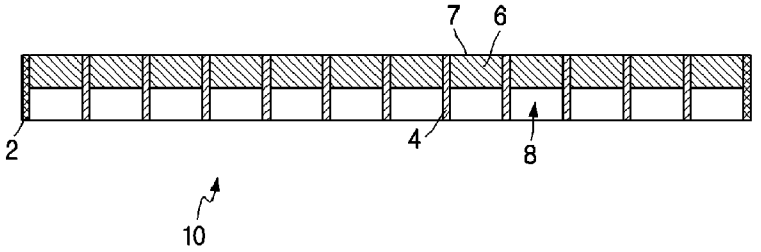
Disclosed is a grating, and more particularly a grating capable of easily and firmly fixing a second partition member to a frame member and a first partition member. This grating includes fixing projections formed at regular intervals along a longitudinal direction of the first partition members on both sides of the first partition member and on inner sides of the frame member that face a side of the first partition member; and second partition members installed between the first partition members and between the first partition member and the frame member respectively, the second partition members having insertion slots into which the fixing projections are inserted, the insertion slots being bent to subsequently contact with the first partition members facing each other or the first partition member and the frame member facing each other so that the fixing projections are inserted into the insertion slots.



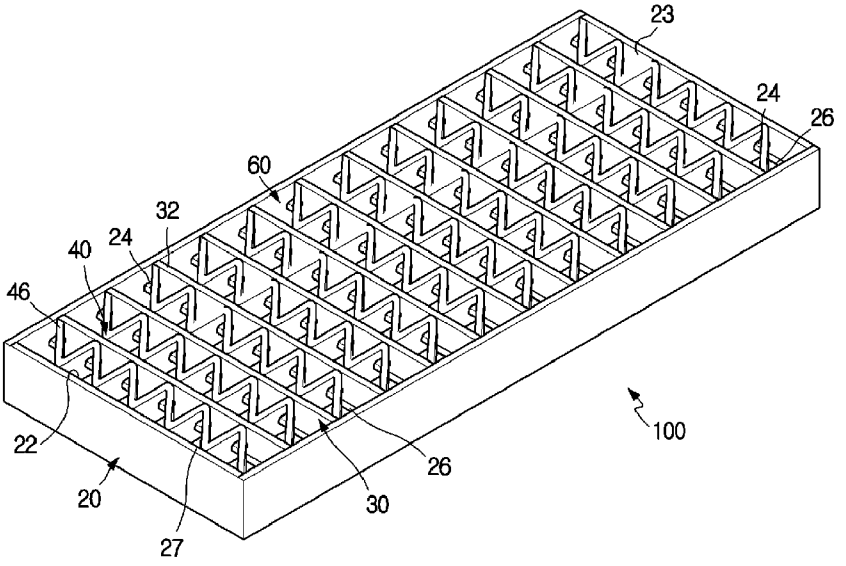
[Fig. 1]



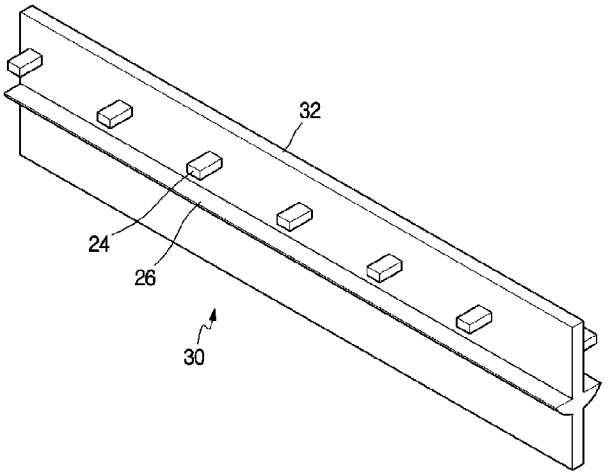
[Fig. 2]



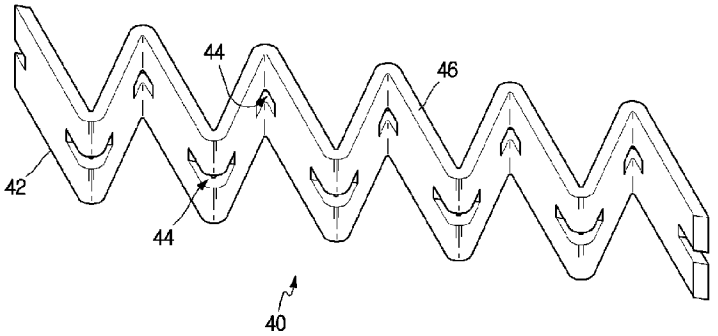
[Fig. 3]



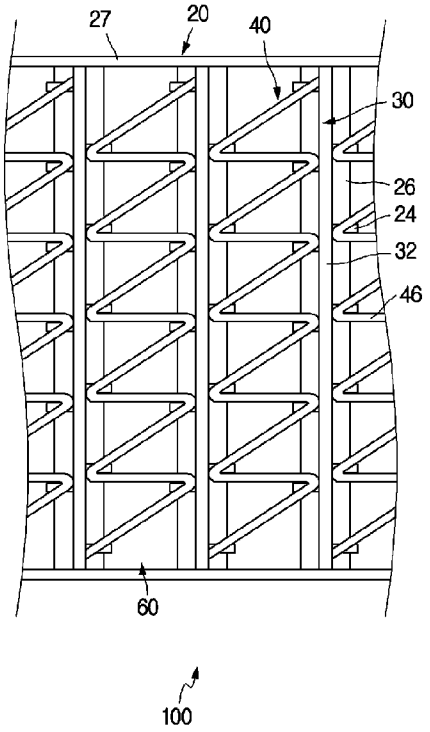
[Fig. 4]



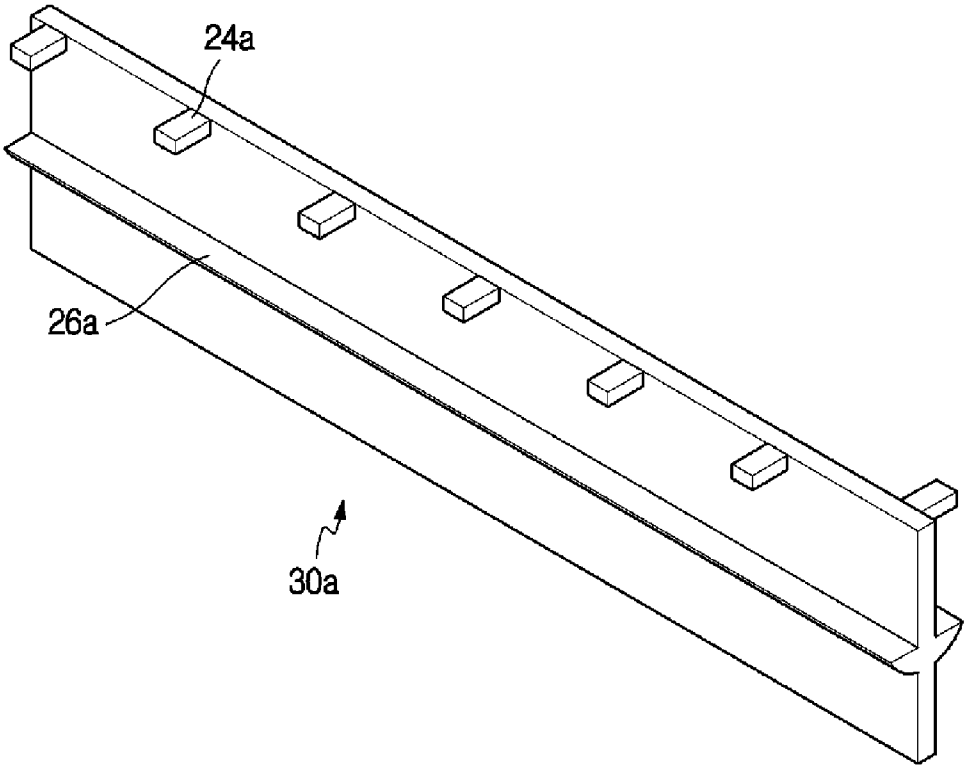
[Fig. 5]



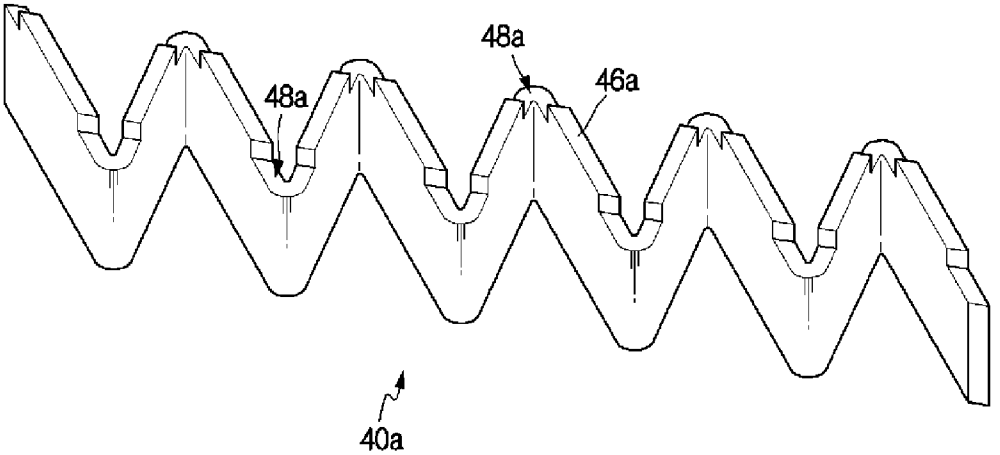
[Fig. 6]



[Fig. 7]



[Fig. 8]



GRATING

TECHNICAL FIELD

[0001] The present invention relates to a grating, and more particularly to a grating capable of easily and firmly fixing a second partition member to a frame member and a first partition member.

BACKGROUND ART

[0002] In general, a grating, which is installed in roadways, residential areas, subways, etc. and widely used as a cover of a drainage way to collect rainwater, is usually comprised of a plurality of rectangular lattices.

[0003] The rectangular lattice is comprised of bearing bars and cross bars. The bearing bars and the cross bars are installed to partition a rectangular margin of the grating in a perpendicular direction. At this time, since two installed bars have different gaps from each other, each of the resultant lattices has a rectangular shape.

[0004] However, the gaps of the lattices are compact enough for walking persons and vehicles such as cars, but the gaps are rather broad for transporting means having small wheels, such as baby carriages, wheelchairs, wheeled suitcases, and shopping carts. Therefore, when a baby carriage or the like passes over a grating, the wheels of the baby carriage are often caught in the lattices of the grating. In such cases, the wheels cannot easily escape from the lattices due to the weight of the baby carriage itself or the stiffness of the rectangular lattices, and when the baby carriage is subject to an excessive force, the baby carriage may be turn over, or a person may be damaged from the accident.

[0005] In order to solve the problem, the applicant of the present invention proposed 'a safety grating'. The safety grating is disclosed in Korean Utility Model Registration No. 0328159.

[0006] As shown in FIGS. **1** and **2**, the safety grating is comprised of a frame member **2**, a plurality of first partition members **4** partitioning the frame member **2** in any one of vertical and horizontal directions, and a plurality of second partition members **6** for densely partitioning rectangular spaces **8** formed by the frame member **2** and the first partition members **4**, and/or the first partition members **4**. That is to say, the problem that the wheels of baby carriages, wheelchairs, wheeled suitcases, shopping carts, or inline skates are caught in the grating can be solved in the safety grating **10** since the second partition members **6** formed to be repeatedly bent in a longitudinal direction densely partition the rectangular spaces **8**.

[0007] Meanwhile, the second partition members **6** are installed by welding to the first partition members **4** or the frame member **2**. That is to say, as shown in FIG. **2**, the top sides **7** of the second partition members **6** are aligned to be flat with the first partition members **4** and the frame member **2**, and then the second partition members **6** are welded to the first partition members **4** or the frame member **2**.

[0008] However, since the second partition members **6** are supported to the first partition members **4** and the frame member **2** only by welding, so many welding points are required to consume much time and cost for welding and the supporting forces thereof are insufficient. In addition, it is very intricate and difficult to align the second partition members **6** to have the same height as those of the first partition members **4** and the frame member **2** in the welding operation.

DISCLOSURE OF INVENTION

Technical Problem

[0009] The present invention is designed to solve the problems of the prior art, and therefore it is an object of the present invention to provide a grating capable of firmly coupling second partition members to first partition members and a frame member in an easy way.

[0010] It is another object of the present invention to provide a grating capable of remarkably reducing manufacture costs and time by significantly decreasing the number of welding points.

[0011] It is still another object of the present invention to provide a grating capable of ensuring a sufficient supporting force.

[0012] It is further another object of the present invention to provide a grating capable of easily aligning the second partition members to have the same height as those of the first partition members and the frame member.

Technical Solution

[0013] In order to achieve the above mentioned object, the present invention provides a grating having a frame member and a plurality of first partition members for partitioning the frame member in any one of vertical and horizontal directions, wherein the grating includes fixing projections formed at regular intervals along a longitudinal direction of the first partition members on both sides of the first partition member and on inner sides of the frame member that face a side of the first partition member; and second partition members installed between the first partition members and between the first partition member and the frame member respectively, the second partition members having insertion slots into which the fixing projections are inserted, the insertion slots being bent to subsequently contact with the first partition members facing each other or the first partition member and the frame member facing each other so that the fixing projections are inserted into the insertion slots.

[0014] Preferably, the frame member and the first partition members include supporting projections formed below the fixing projections so as to support lower sides of the second partition members.

[0015] More preferably, top sides of the second partition members have the same height as top sides of the frame member and the first partition members.

[0016] In another aspect of the invention, there is also provided a grating having a frame member and a plurality of first partition members for partitioning the frame member in any one of vertical and horizontal directions, wherein the grating includes fixing projections formed at regular intervals along a longitudinal direction of the first partition members at upper ends of both sides of the first partition members and at upper ends of inner sides of the frame member that face a side of the first partition member; second partition members installed between the first partition members and between the first partition member and the frame member respectively, the second partition members being bent to subsequently contact with the first partition members facing each other or the first partition member and the frame member facing each other so as to be fixed by the fixing projections, the second partition members having the same height as top sides of the frame

member and the first partition members; and supporting projections formed below the fixing projections on the inner side of the frame member and both sides of the first partition members to support lower sides of the second partition members.

[0017] Here, the fixing projections are preferably bent at ends thereof to fix the second partition members.

[0018] Preferably, engagement grooves to be engaged with the fixing projections are formed in top sides of the second partition members.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] These and other features, aspects, and advantages of preferred embodiments of the present invention will be more fully described in the following detailed description, taken accompanying drawings. In the drawings:

[0020] FIG. **1** is a perspective view illustrating a grating according to the prior art;

[0021] FIG. **2** is a cross sectional view taken along the line II-II' of FIG. **1**;

[0022] FIG. **3** is a perspective view illustrating a grating according to a preferred embodiment of the present invention;

[0023] FIG. **4** is a perspective view illustrating a first partition member of the grating according to the preferred embodiment of the present invention;

[0024] FIG. **5** is a perspective view illustrating a second partition member of the grating according to the preferred embodiment of the present invention;

[0025] FIG. **6** is a plane view showing that the second partition member of FIG. **5** is installed to the first partition member of FIG. **4**;

[0026] FIG. **7** is a perspective view illustrating a first partition member of the grating according to another preferred embodiment of the present invention; and

[0027] FIG. **8** is a perspective view illustrating a second partition member of the grating according to another preferred embodiment of the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

[0028] Hereinafter, preferred embodiments of the present invention will be described in detail referring to the accompanying drawings. Prior to the description, it should be understood that the terms used in the specification and appended claims should not be construed as limited to general and dictionary meanings, but interpreted based on the meanings and concepts corresponding to technical aspects of the present invention on the basis of the principle that the inventor is allowed to define terms appropriately for the best explanation. Therefore, the description proposed herein is just a preferable example for the purpose of illustration only, not intended to limit the scope of the invention, so it should be understood that other equivalents and modifications could be made thereto without departing from the spirit and scope of the invention.

[0029] FIG. **3** is a perspective view illustrating a grating according to a preferred embodiment of the present invention, FIG. **4** is a perspective view illustrating a first partition member of the grating, FIG. **5** is a perspective view illustrating a second partition member of the grating, and FIG. **6** is a plane view showing that the second partition member is installed to the first partition member.

[0030] Referring to FIGS. **3** through **6**, the grating **100** is comprised of a frame member **20**, first partition members **30** for partitioning the frame member **20**, and second partition members **40** installed between the first partition members **30** and between the first partition member **30** and the frame member **20**.

[0031] The frame member **20** is a frame having a predetermined height, a predetermined length and a predetermined width. Preferably, fixing projections **24** and supporting projections **26** are formed on inner sides **22** and **23** of the frame member **20** facing one side of the first partition member **30**.

[0032] The fixing projections **24** are formed horizontally on the inner sides **22** and **23** along the longitudinal direction of the first partition members **30** at regular intervals. The fixing projection **24** is inserted into an insertion slot **44** of the second partition member **40** to support and fix the second partition members **40**. Preferably, the fixing projection **24** is inserted into the insertion slot **44** and then bent at its ends. It is for fixing the second partition member **40** more firmly. Meanwhile, since the fixing projections **24** are installed at regular intervals, the fixing projections **24** allow easier drainage through the grating **100** rather than the case that fixing projections are installed continuously.

[0033] The supporting projections **26** are successively formed horizontally on inner sides **22** and **23** below the fixing projection **24** so as to support a lower side **42** of the second partition member **40**. In case the fixing projection **24** is inserted into the insertion slot **44**, the supporting projections **26** support the lower side **42** of the second partition member **40**. In addition, in case the fixing projection **24** is inserted into the insertion slot **44**, the supporting projections **26** are formed at positions that make the upper side of the second partition member **40** have the same height as the upper sides of the first partition member **30** and the frame member **20**. Thus, when the second partition member **40** is installed, it is possible to eliminate difficult and troublesome works for aligning its height with the first partition member **30** and the frame member **20**.

[0034] The first partition member **30** partitions the frame member **20** in any one of the vertical and horizontal directions. That is to say, the first partition member **30** partitions the frame member **20** into rectangular spaces **60**. Meanwhile, the first partition **30** is preferably installed so that the upper side **32** of the first partition member **30** can have the same height as that of the upper side **27** of the frame member **20**. This is intended to allow the upper side of the grating **100** to have an even top side. Meanwhile, the first partition member **30** is installed to the frame member **20** by means of a common manner such as welding and bolting.

[0035] As shown in FIGS. **4** and **6**, the first partition member **30** is provided with the supporting projections **26** and the fixing projections **24** which are formed on both sides of the first partition member **30**. At an end portion of the first partition member **30**, the fixing projections **24** may be installed to any one of both sides. This is because the second partition member **40** is bent to alternately contact with the fixing projections **24** of the facing first partition members **30** or with the fixing projections **24** of the facing first partition members **30** and the inner sides **22** and **23**. The supporting projections **26** and the fixing projection **24** will not be described here since they are described in detail above.

[0036] The second partition member **40** is installed in the rectangular space **60** formed by the frame member **20** and the first partition member **30** so as to partition the rectangular space **60** more densely again.

[0037] As shown in FIG. **5**, the second partition member **40** has the insertion slot **44** into which the fixing projection **24** is inserted. Preferably, the second partition member **40** is bent to subsequently contact with the first partition members **30** facing each other or the first partition member **30** and the frame member **20** facing each other. After the fixing projection **24** is inserted into the insertion slot **44**, an end of the fixing projection **24** is bent so that the second partition member **40** is firmly fixed to the first partition member **30** or the frame member **20**.

[0038] As mentioned above, the second partition member **40** is coupled by the first partition member **30**, the frame member **20** and the fixing projection **24**, this coupling is very firm and does not need separate welding work. Thus, it may give more sufficient supporting force than welding, and also reduces manufacture time and costs as much as required for welding. In addition, since the number of welding points is remarkably decreased, it may be prevented that appearance of products is damaged by welding.

[0039] As mentioned above, the second partition member **40** is supported by the supporting projections **26** and the fixing projections **24**. At this time, the second partition member **40** is preferably installed so that its upper side **46** has the same height as an upper side **32** of the first partition member **30** and an upper side **27** of the frame member **20**. It is for flattening the upper surface of the grating **100**.

[0040] FIG. **7** is a perspective view showing a first partition member of a grating according to another embodiment of the present invention, and FIG. **8** is a perspective view showing a second partition member of the grating.

[0041] The first partition member **30***a* has fixing projections **24***a* formed at top ends of both sides along its longitudinal direction. Preferably, the fixing projection **24***a* is engaged with an engagement groove **48***a* formed on the top side of the second partition member **40***a*, as explained later. Meanwhile, the fixing projections **24***a* formed on the frame member are also preferably formed at top ends of its inner sides.

[0042] The second partition members **40***a* are installed between the first partition members **30***a* and between the first partition member **30***a* and the frame member. The second partition member **40***a* is bent to alternately contact with the first partition members **30***a* facing each other, or the first partition member **30***a* and the frame member facing each other. The second partition member **40***a* is coupled with the fixing projections **24***a* at the bending portion. That is to say, the second partition member **40***a* is supported by the supporting projections **26***a* and also fixed to the first partition member **30***a* by the fixing projections **24***a*.

[0043] Preferably, the fixing projection **24***a* is bent at its end after being installed to the engagement groove **48***a*. It is for fixing the second partition member **40***a* more firmly.

[0044] The engagement groove **48***a* formed on the top side **46***a* of the second partition member **40***a* is engaged with the fixing projection **24***a* to prevent any unevenness from being generated on the top side of the grating **100**.

[0045] Now, a process of manufacturing the grating **100** according to the preferred embodiment of the present invention will be described.

[0046] First, a frame member **20** having fixing projections **24** and supporting projections **26** on a pair of inner sides **22** and **23** facing each other is prepared.

[0047] The fixing projection **24** has predetermined thickness and strength so as to be bent after being inserted into the insertion slot **44**. In case a second partition member **40** is installed, the fixing projections **24** are formed at positions that make the top side **46** of the second partition member **40** have the same height as the top side **32** of the first partition member **30** and the top side **27** of the frame member **20**.

[0048] Preferably, the frame member **20** is prepared so that one of the inner sides **22** and **23** is open. It is for facilitating easier installation of the first and second partition members **30** and **40**. This side is closed after the first and second partition members **30** and **40** are installed. In the followings, a case that the right inner side **23** among the inner sides **22** and **23** is opened is illustrated as an example.

[0049] After the frame member **20** is prepared, the first and second partition members **30** and **40** are fabricated. The first and second partition members **30** and **40** are already described above.

[0050] Subsequently, the second partition member **40** is installed to the frame member **20** so that the fixing projection **24** on the left inner side **22** is inserted into the insertion slot **44**. Then, the first partition member **30** is installed to a right portion of the second partition member **40** so that the fixing projection **24** of the first partition member **30** is inserted into the insertion slot **44**. The first partition member **30** may be coupled to the frame member **20** by means of welding or bolts. The above procedure is repeated to install the first and second partition members **30** and **40** from left to right.

[0051] The right inner side **23** in an open state is installed so that the fixing projection **24** is inserted into the insertion slot **44** after the rightmost second partition member **40** is installed.

[0052] If the first and second partition members **30** and **40** are completely installed by the above procedure, ends of the fixing projections **24** are bent to firmly fix the second partition member **40** to the first partition member **30**. This bending work may be realized manually or using press or other hydraulic tools.

[0053] Though it has been described that the right inner side **23** is open and the first and second partition members **30** and **40** are installed from left to right, it is also possible that the left inner side **22** is open and the first and second partition members **30** and **40** are installed from right to left.

[0054] Meanwhile, a method for manufacturing a grating according to another embodiment of the present invention may be easily deduced from the above manufacture process by those skilled in the art, and not described in detail here.

[0055] The present invention has been described in detail. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

INDUSTRIAL APPLICABILITY

[0056] As described above, the grating according to the present invention has the following effects.

[0057] First, the second partition member may be easily and firmly fixed to the first partition member and the frame member.

[0058] Second, since the number of welding points required for installation of the first and second partition members is remarkably decreased, their manufacture time and costs are reduced and also appearance of the final products is not damaged by welding.

[0059] Third, the grating may ensure sufficient supporting force.

[0060] Fourth, a height of the second partition member may be easily aligned with the top sides of the first partition member and the frame member.

[0061] Fifth, the granting also ensures more efficient drainage.

1. A grating having a frame member and a plurality of first partition members for partitioning the frame member in any one of vertical and horizontal directions, the grating comprising:

fixing projections formed at regular intervals along a longitudinal direction of the first partition members on both sides of the first partition member and on inner sides of the frame member that face a side of the first partition member; and

second partition members installed between the first partition members and between the first partition member and the frame member respectively, the second partition members having insertion slots into which the fixing projections are inserted, the insertion slots being bent to subsequently contact with the first partition members facing each other or the first partition member and the frame member facing each other so that the fixing projections are inserted into the insertion slots.

2. The grating according to the claim **1**, wherein the frame member and the first partition members include supporting projections formed below the fixing projections so as to support lower sides of the second partition members.

3. The grating according to the claim **2**, wherein top sides of the second partition members have the same height as top sides of the frame member and the first partition members.

4. A grating having a frame member and a plurality of first partition members for partitioning the frame member in any one of vertical and horizontal directions, the grating comprising:

fixing projections formed at regular intervals along a longitudinal direction of the first partition members at upper ends of both sides of the first partition members and at upper ends of inner sides of the frame member that face a side of the first partition member;

second partition members installed between the first partition members and between the first partition member and the frame member respectively, the second partition members being bent to subsequently contact with the first partition members facing each other or the first partition member and the frame member facing each other so as to be fixed by the fixing projections, the second partition members having the same height as top sides of the frame member and the first partition members; and

supporting projections formed below the fixing projections on the inner side of the frame member and both sides of the first partition members to support lower sides of the second partition members.

5. The grating according to claim **4**, wherein the fixing projections are bent at ends thereof to fix the second partition members.

6. The grating according to claim **4**, wherein engagement grooves to be engaged with the fixing projections are formed in top sides of the second partition members.

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