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(54) **Multifunctional bookshelf structure**

Mehrzweck Bücherregaleinrichtung

Structure de rayonnage pour livres à usage multiple

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**US-A- 5 303 127**      **US-A- 5 687 581**

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**Description****BACKGROUND OF THE INVENTION****FIELD OF THE INVENTION**

**[0001]** The present invention relates to a bookshelf structure adapted to stack data such as a plurality of books in neat order to allow a user to easily select necessary data, and more particularly to a multifunctional bookshelf adapted to provide a pleasant environment to users on one hand and to provide a high conservation efficiency to the stacked data on the other hand. A bookshelf according to the preamble of the independent claim is known from US-A-4 689 726.

**DESCRIPTION OF THE PRIOR ART**

**[0002]** Generally, bookshelves used in libraries or stack rooms of public institutions are vertically arranged panels where books and other data are inserted and stored at multi-staged space thereof, whereas no separate ventilations or dehumidifying facilities are equipped therewith, such that books or other data to be stored for a long time tend to be discolored, degenerated or damaged by vermins, thereby resulting in generation of stench.

**[0003]** There is another problem in that plural numbers of shelves are arranged in rows to have a plurality of books inserted thereinto, such that, unless there are special lighting systems to light the books, books or data cannot be properly distinguished or found because books or data are shaded by adjacent bookshelves.

**SUMMARY OF THE INVENTION**

**[0004]** The present invention is disclosed to solve the aforementioned problems and it is an object of the present invention to provide a multifunctional bookshelf adapted to possess dehumidifying, moth-proof functions for increase of preservation ability for data or books stacked on the shelves.

**[0005]** It is another object of the present invention to provide a multifunctional bookshelves adapted to provide a pleasant useability, to prevent generation of stench and to supply a sufficient lighting thereto.

**[0006]** In accordance with the objects of the present invention, there is provided a multifunctional bookshelf structure as defined in the independent claim. Preferred embodiments are defined in the dependent claims.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0007]** For fuller understanding of the nature and objects of the invention, reference should be made to the following detailed description taken in conjunction with the accompanying drawings in which:

Figure 1 is a perspective view for illustrating a multifunctional bookshelf according to the present invention; and

Figure 2 is a sectional view for illustrating principal parts of Figure 1.

**DETAILED DESCRIPTION OF THE INVENTION**

**[0008]** Now, preferred embodiment of the present invention will be described in detail with reference to the accompanying drawings.

**[0009]** Figures 1 and 2 are schematic drawings for illustrating a multifunctional bookshelf according to the present invention, where the bookshelf basically is composed of an upper plate 1, a lower plate 3 and a plurality of mid plates 5 for stack of a multiplicity of books.

**[0010]** At this location, the upper plate 1 is mounted with lighting means for providing lighting to a frontal lower side of the bookshelf, where the lighting means includes a light 9 mounted at a protruder 7 protruded to a front side of the upper plate 1, an access sensor 11 for detecting whether a person is at a position near to the bookshelf, an illumination sensor 13 for measuring the degree of illumination at the bookshelf, and a controller 15 for receiving signals from the access sensor 11 and the illumination sensor 13 to control the light.

**[0011]** The access sensor 11, the illumination sensor 13 and the controller 15 are used as a module integrally formed with those as shown in Fig.2 but may be respectively used at a proper position where beautiful look of the bookshelf is not hampered.

**[0012]** Meanwhile, the upper plate 1, the lower plate 3 and the mid plates 5 are provided with many container bodies, where each container body includes a lower body 19 to be inserted into a through hole 17 so formed as to penetrate the upper plate, the lower plate and the mid plates from up and down directions, and a multi hole copper plate 23 covered on the lower body 19 and formed with many holes.

**[0013]** Meanwhile, the lower plate 3 of the bookshelf is separately equipped with a container body of a drawer 25 where contents thereof can be replaced.

**[0014]** The plurality of container bodies thus described are provided therein with insecticide, dehumidifier, deodorant and aromatic 27 where these agents may be artificial or natural such as charcoal or active carbon.

**[0015]** Now, operation of the present invention thus constructed will be described.

**[0016]** When a user approaches a multifunctional bookshelf to search for data stacked on the shelves, the controller 15 discriminates whether the user has approached the bookshelf while the illumination sensor 13 detects a degree of illumination at the bookshelf to determine whether to light the light 9, and if necessary, lights the light 9 to illuminate the front side of the bookshelf.

**[0017]** As a result, the user can always search nec-

essary data from the bookshelf at all times under sufficient lighting.

[0018] The container bodies thus provided at the upper plate 1, the lower plate 3 and the plurality of mid plates 5 are inserted by the lower body 19 containing insecticide, dehumidifier, deodorant and aromatic 27, the lower body 19 being covered by the multi hole copper plate 23, such that data stacked or arranged on the shelves are prevented from being damaged caused by insects and humidity by physical and chemical reactions of the multi hole copper plate 23 and contents in the lower body 19, and stench is removed, thereby providing pleasant aroma and environment to the user.

[0019] Particularly, the multi hole copper plate 23 made of copper can remove stench and posses an excellent air cleaning capability, thereby cleaning polluted air in the multifunctional bookshelf.

[0020] Meanwhile, a large amount of insecticide and dehumidifier contained in the drawer 25 provided underneath the lower plate 3 also prevents insects from approaching the bookshelf, removes humidity and keeps stored data from being damaged, thereby promoting the property of preservation for the data, and specifically, the drawer 25 is loaded with a large amount of charcoal and active carbon to completely eliminate humidity coming from bottom surface of the bookshelf, enabling to obtain a perfect dehumidifying result.

[0021] Of course, the drawer 25 can be easily opened and closed, and contents such as charcoal and active carbon contained therein may be simply replaced. The container body comprising the lower plate 19 and the multi hole copper plate 23 can easily replace contents therein by opening the multi hole copper plate 23 mounted thereon.

[0022] As apparent from the foregoing, there is an advantage in the multifunctional bookshelf thus described according to the present invention in that dehumidifying and insect-proof functions are provided to promote the property of preservation of data stacked on shelves, stench is prevented from generation and sufficient illumination is supplied, thereby providing users pleasant environment.

## Claims

1. A multifunctional bookshelf structure comprising a bookshelf, the bookshelf including an upper panel, a lower panel and a plurality of intermediate panels, wherein the bookshelf comprises  
lighting means **characterised in that** said lighting means is mounted at the upper plate to provide a lighting to a lower front side thereof;  
a plurality of container bodies integrated to the upper panel, the lower panel and the intermediate panels; the structure further comprising  
insecticide, dehumidifier, deodorizer and aromatic stored in each of the plurality of container bod-

ies.

2. The bookshelf as defined in claim 1, wherein the illumination means comprises:

a light mounted at a protruder protruded to a front side of the upper plate;  
an access sensor for detecting whether a person is at a position near to the bookshelf;  
an illumination sensor for measuring the degree of illustration at the bookshelf; and  
a controller for receiving signals from the access sensor and the illumination sensor to control the light.

3. The bookshelf as defined in claim 1, wherein the container body comprises:

a lower body to be inserted into a through hole so formed as to penetrate the upper panel, the lower panel and the intermediate panels from up and down directions; and  
a multi hole copper plate covered on the lower body and formed with many holes.

4. The bookshelf as defined in claim 1, wherein one of the container bodies is provided underneath the lower panel to allow contents to be replaced.

5. The bookshelf as defined in claim 1, wherein the dehumidifier and deodorizer are charcoal and active carbon.

## Patentansprüche

1. Eine Mehrzweck-Bücherregaleinrichtung umfassend ein Bücherregal, das einen oberen Boden und einen unteren Boden sowie eine Mehrzahl von Zwischenböden aufweist, wobei das Bücherregal umfasst:

ein Beleuchtungsmittel, **dadurch gekennzeichnet, dass** es an dem oberen Boden installiert ist, um eine Beleuchtung der unteren Vorderseite desselben zu ermöglichen,

eine Mehrzahl von Behälterkörpern, die in den oberen Boden, den unteren Boden und die Zwischenböden integriert sind, wobei die Einrichtung weiterhin

Insektizid, Trockenmittel, Desodorans und eine aromatische Substanz umfasst, welche in jedem einzelnen der Mehrzahl von Behälterkörpern gelagert sind.

2. Das Bücherregal gemäß Anspruch 1, bei dem das

Beleuchtungsmittel umfasst:

eine an einem an einer Vorderseite des oberen Bodens hervorragenden Überstand installiertes Lampe,

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einen Zugangssensor, der dazu dient festzustellen, ob sich eine Person in einer Position in der Nähe des Bücherregals befindet,

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einen Beleuchtungssensor zum Messen des Beleuchtungsgrades an dem Bücherregal, und

eine Steuerung für den Empfang von Signalen vom Zugangssensor and Beleuchtungssensor, zur Steuerung der Lampe.

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3. Das Bücherregal nach Anspruch 1, bei dem der Behälterkörper umfasst:

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ein unterer Körper, der in eine durchgehende Öffnung einzuführen und so geformt ist, dass er in Aufwärts- und Abwärtsrichtung durch den oberen Boden, den unteren Boden und die Zwischenböden hindurch verläuft, und

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eine Mehrloch-Kupferplatte, die den unteren Körper abdeckt und mit einer Vielzahl von Löchern versehen ist.

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4. Das Bücherregal nach Anspruch 1, bei dem einer der Behälterkörper unterhalb des unteren Bodens vorgesehen ist, um das Ersetzen des Inhalts zu ermöglichen.

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5. Das Bücherregal nach Anspruch 1, bei dem das Trockenmittel und das Desodorans künstliche Kohle und Aktivkohle sind.

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## Revendications

1. Structure de rayonnage pour livres à usage multiple comprenant un rayonnage pour livres, le rayonnage pour livres comprenant un panneau supérieur, un panneau inférieur et une pluralité de panneaux intermédiaires, dans laquelle le rayonnage pour livres comprend

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un moyen d'éclairage, **caractérisée en ce que** ledit moyen d'éclairage est monté au niveau de la tablette supérieure pour éclairer un côté frontal inférieur de celle-ci;

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une pluralité de corps en forme de boîtes, intégrés au panneau supérieur, au panneau inférieur et aux panneaux intermédiaires, la structure comprenant en outre

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un insecticide, un déshydratant, un désodorisant et un aromatisant stockés chacun dans la plu-

ralité de corps en forme de boîtes.

2. Rayonnage pour livres selon la revendication 1, dans lequel le moyen d'éclairage comprend :

une lampe montée au niveau d'une saillie faisant saillie d'un côté frontal de la tablette supérieure;

un capteur d'accès pour détecter si une personne est à une position proche du rayonnage pour livres;

un capteur d'éclairage pour mesurer le degré d'éclairage du rayonnage pour livres; et

un régisseur pour recevoir les signaux du capteur d'accès et du capteur d'éclairage afin de commander la lampe.

3. Rayonnage pour livres selon la revendication 1, dans lequel le corps en forme de boîte comprend :

un corps inférieur à insérer dans un trou traversant formé de façon à pénétrer dans le panneau supérieur, le panneau inférieur et les panneaux intermédiaires depuis le haut et le bas; et une plaque de cuivre à trous multiples recouvrant le corps inférieur et comprenant de nombreux trous.

4. Rayonnage pour livres selon la revendication 1, dans lequel un des corps en forme de boîtes est disposé sous le panneau inférieur pour permettre de remplacer le contenu.

5. Rayonnage pour livres selon la revendication 1, dans lequel le déshydratant et le désodorisant sont le charbon de bois et le charbon actif.

FIG. 1

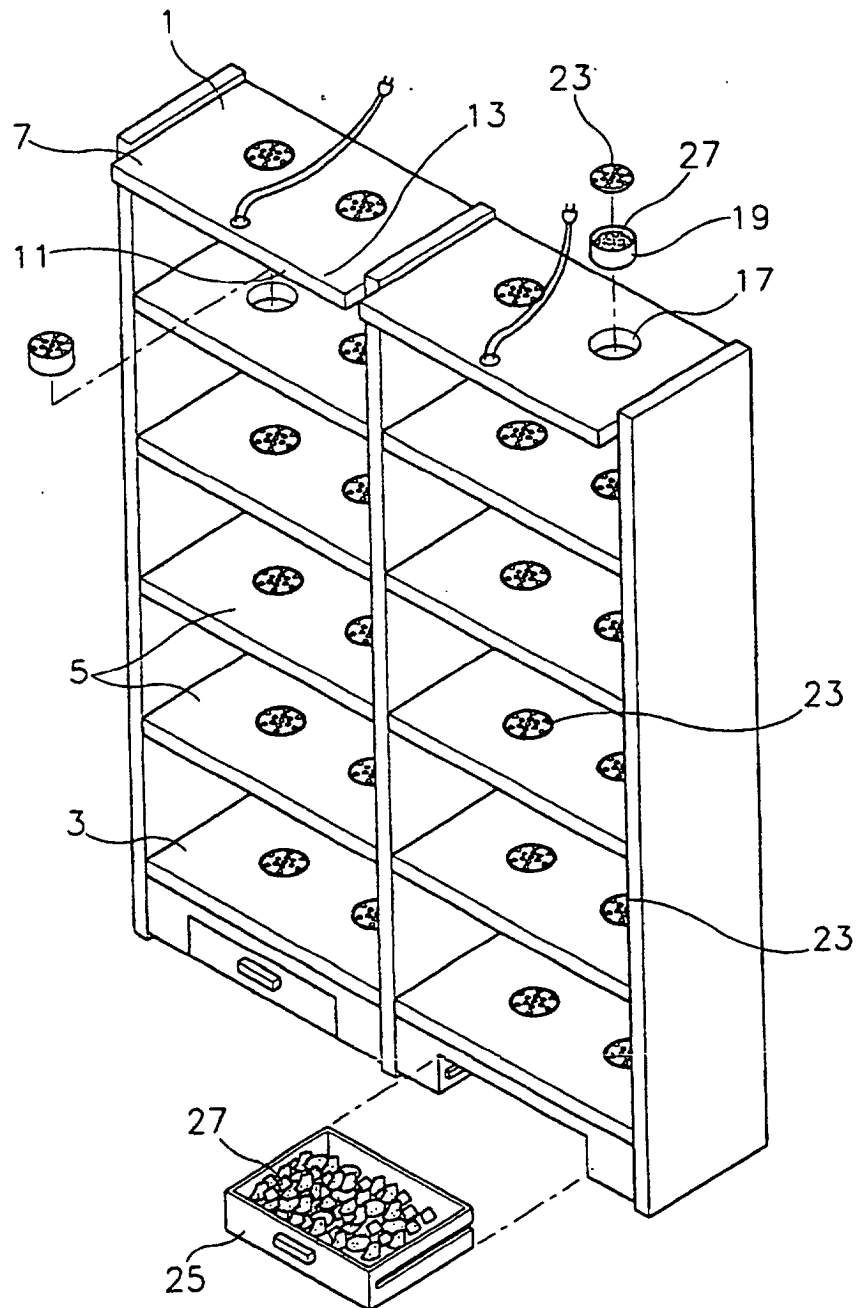


FIG.2

