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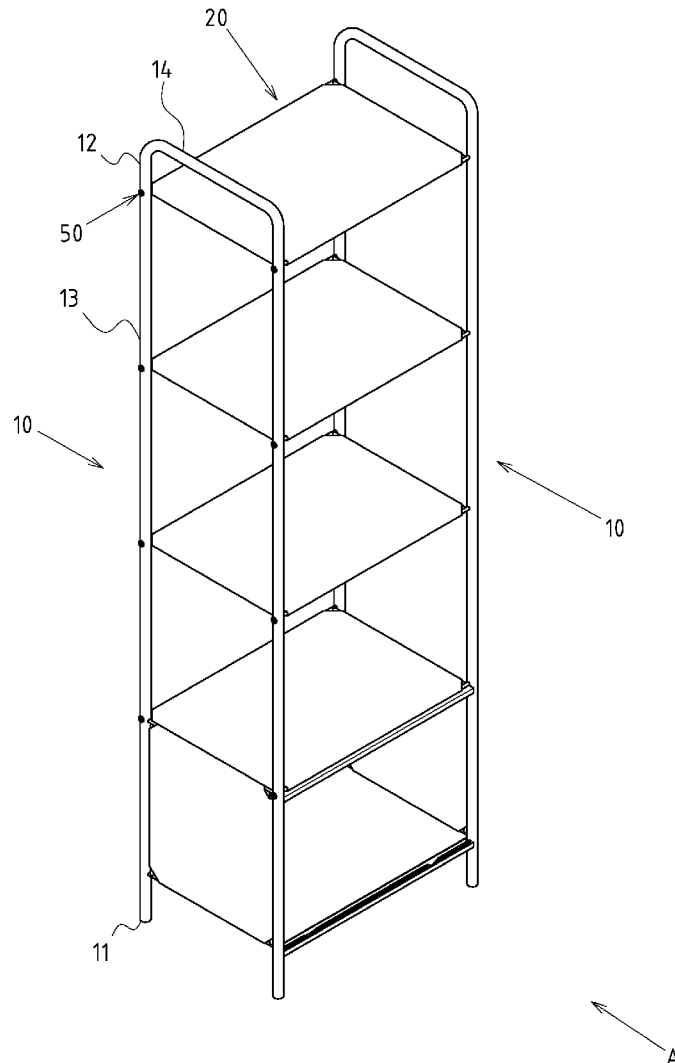
(19) **United States**(12) **Patent Application Publication**
CHENG(10) **Pub. No.: US 2010/0181272 A1**(43) **Pub. Date: Jul. 22, 2010**(54) **SECTIONAL SHELF****Publication Classification**(75) Inventor: **Kun-Lung CHENG**, Taichung
(TW)(51) **Int. Cl.**
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HOUSTON, TX 77002 (US)(52) **U.S. Cl. 211/153**(73) Assignee: **DONIDO ENTERPRISE Co.,**
Ltd., Taichung (TW)(57) **ABSTRACT**(21) Appl. No.: **12/546,625**

The present invention provides a sectional shelf including vertical support members and the metal wire shelf units transversely assembled between the support members. The shelf unit is made up of the metal wire frames and the flexible shelf board. Threaded rods are protruding at two positions in the spacing of two opposite sides of the shelf units, and on the support member, through holes are set, which have studs made up of convex pipe, a screw hole and a diameter-expanding end cap. The convex pipe crosses the through hole, the end cap connects to the outer side of the support member, and the screw hole is for the protruding threaded rods of the shelf unit inserting into the stud.

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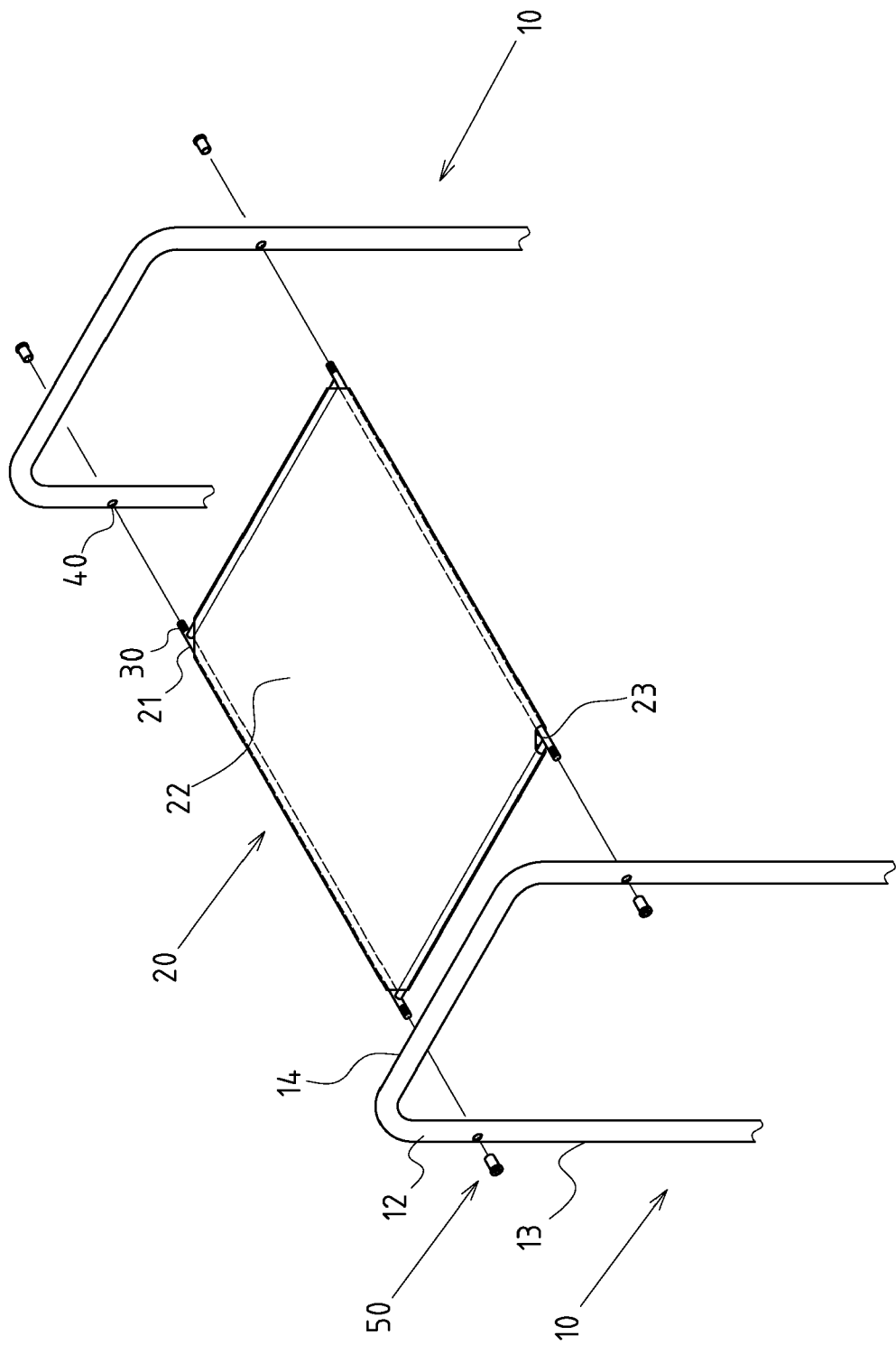


FIG.2

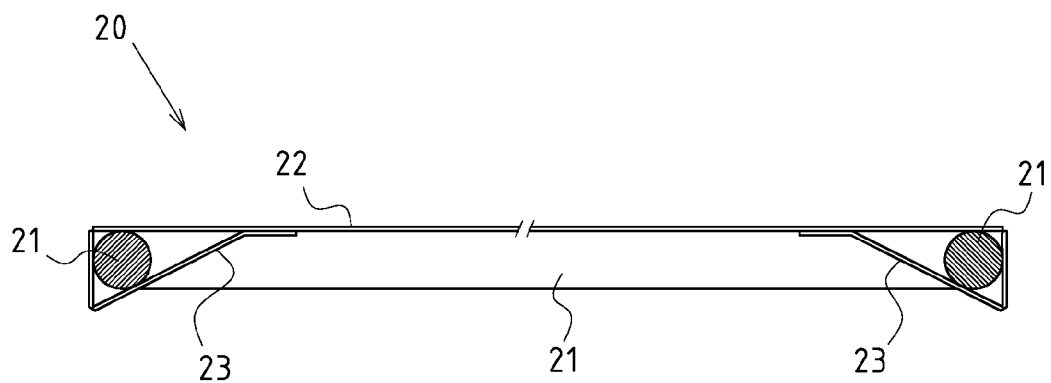


FIG. 3

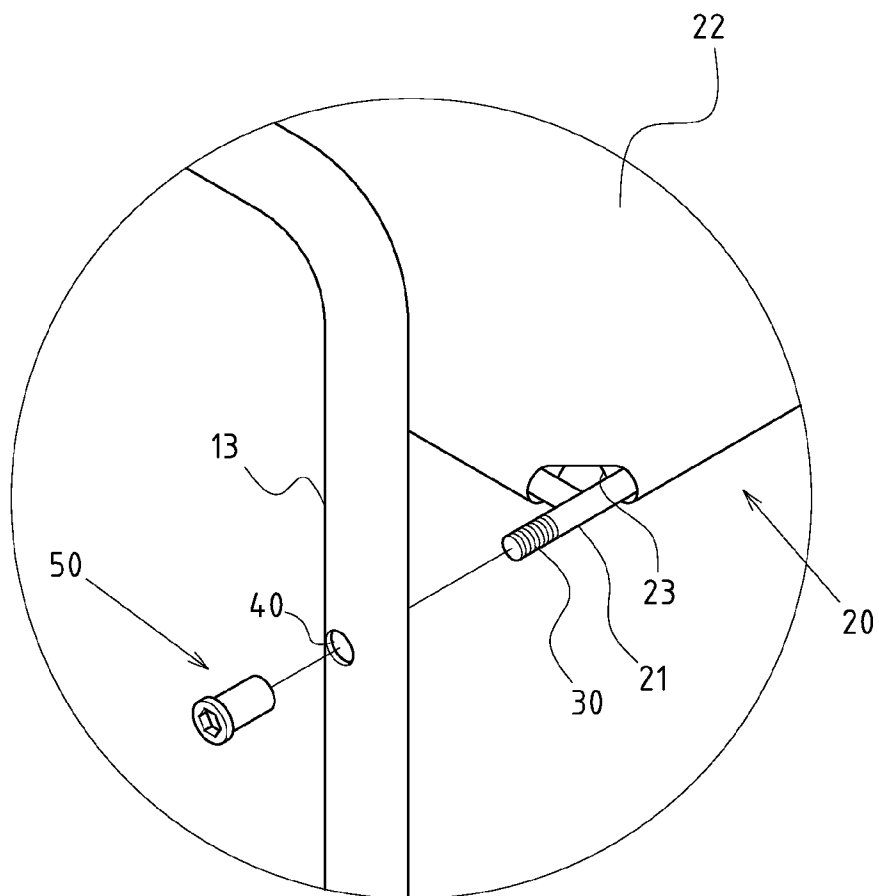


FIG. 4

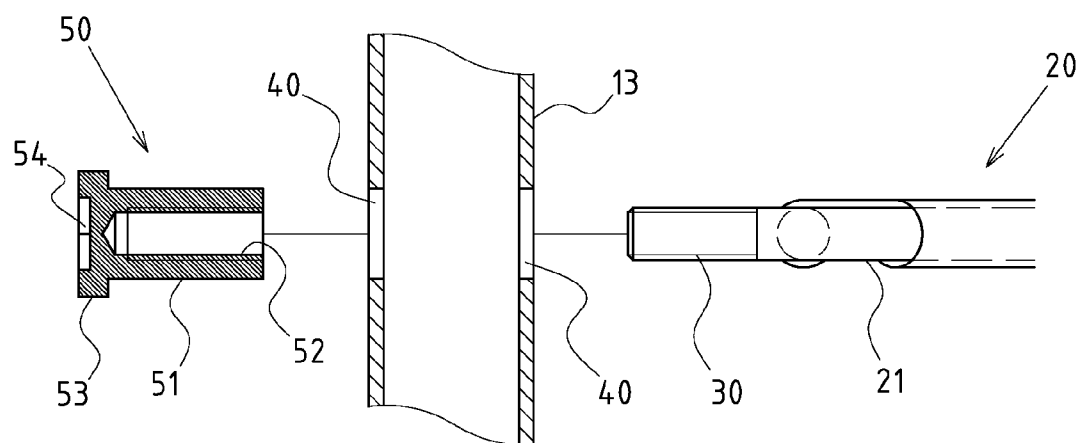


FIG.5

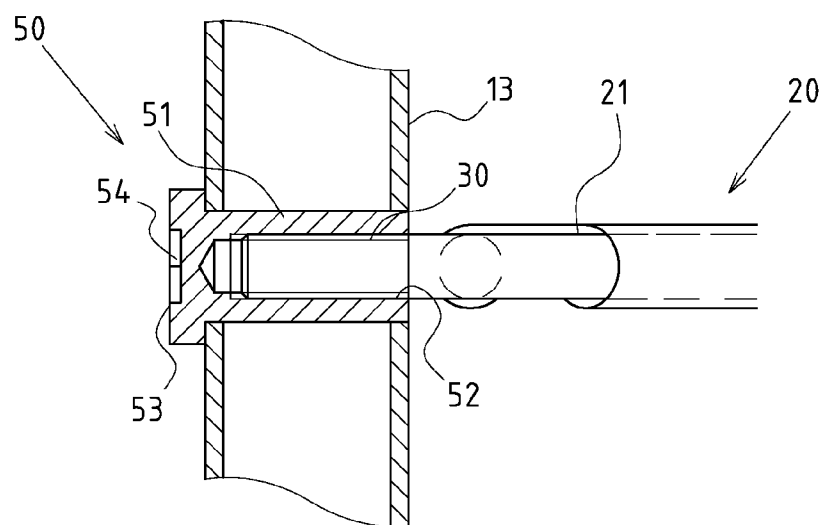


FIG.6

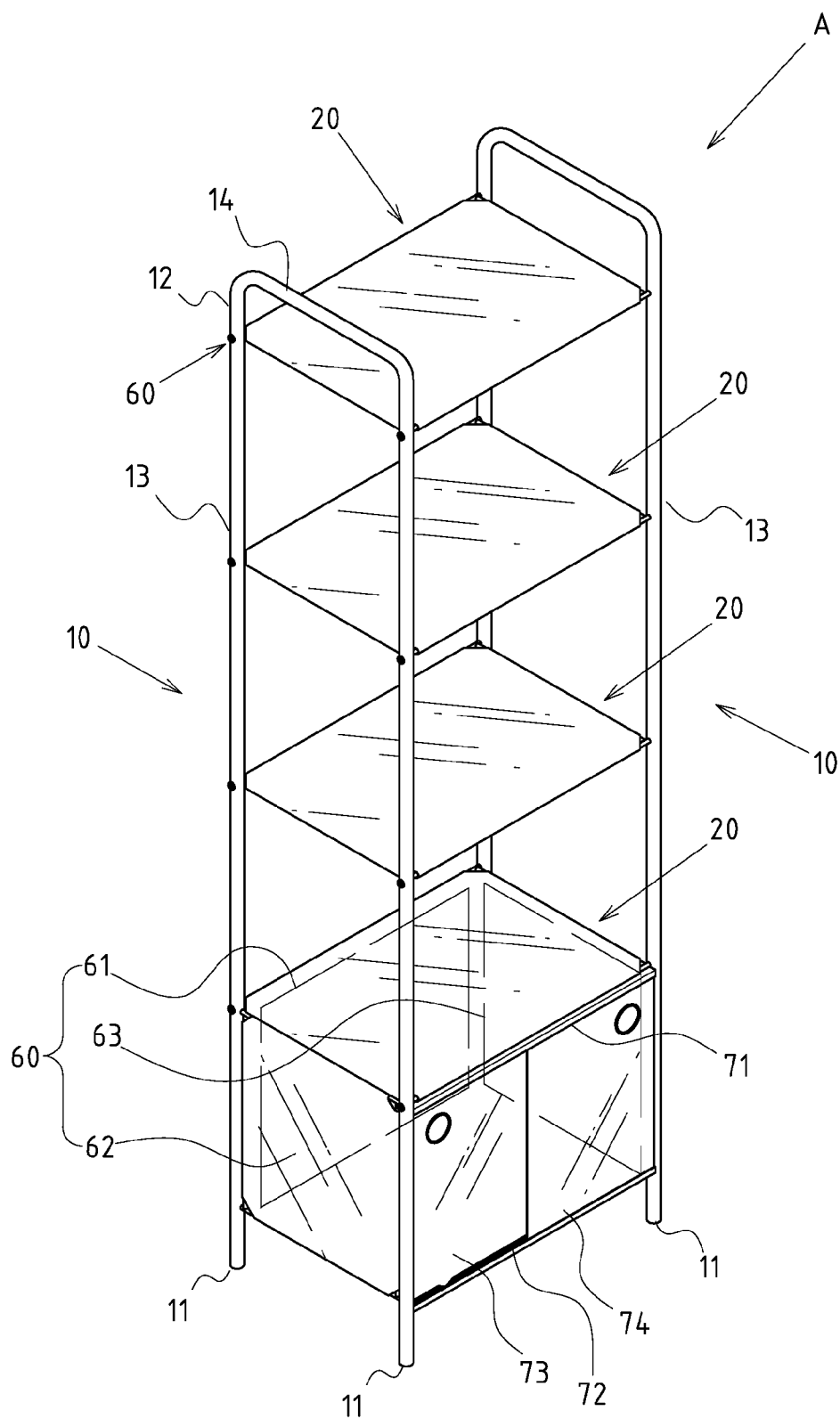


FIG. 7

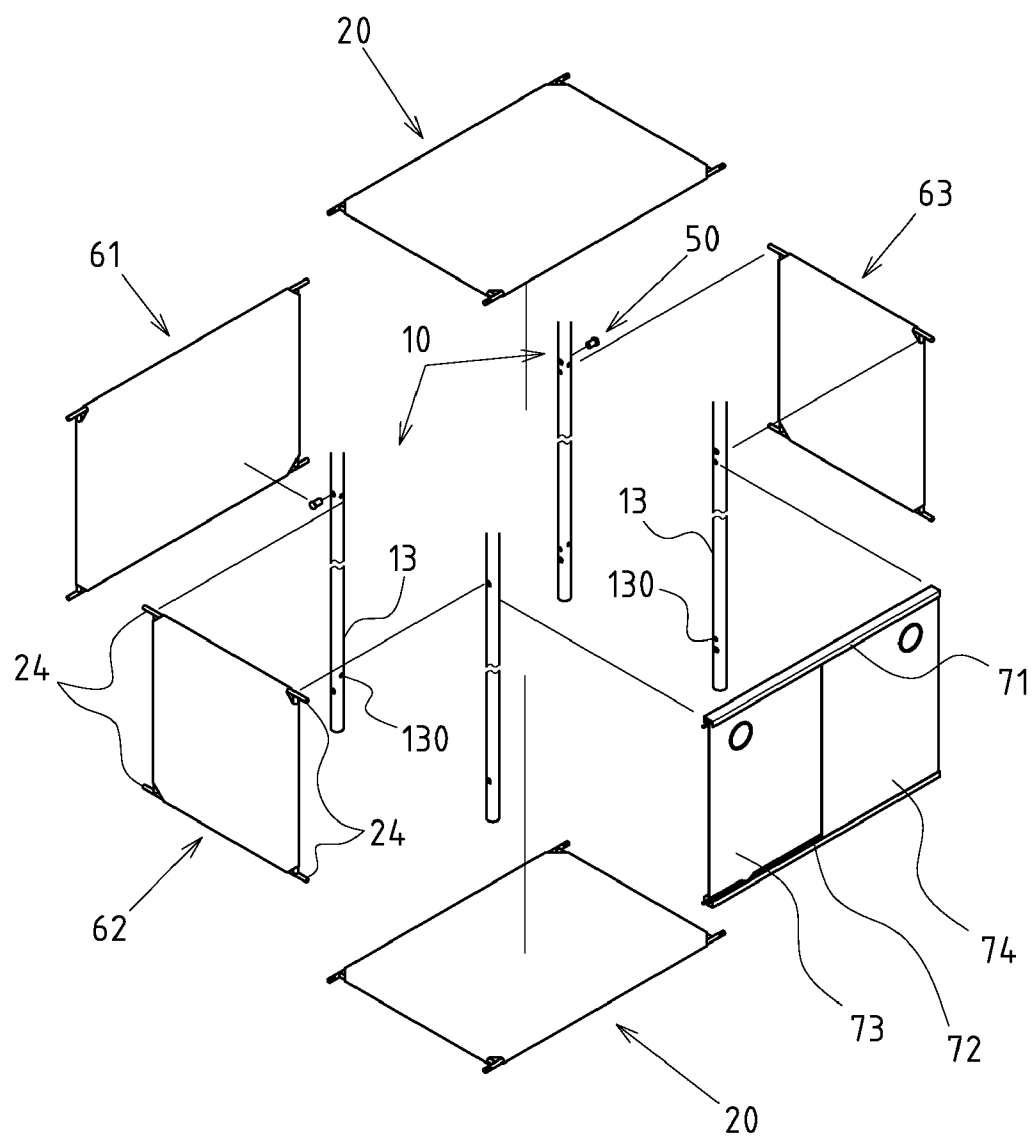


FIG. 8

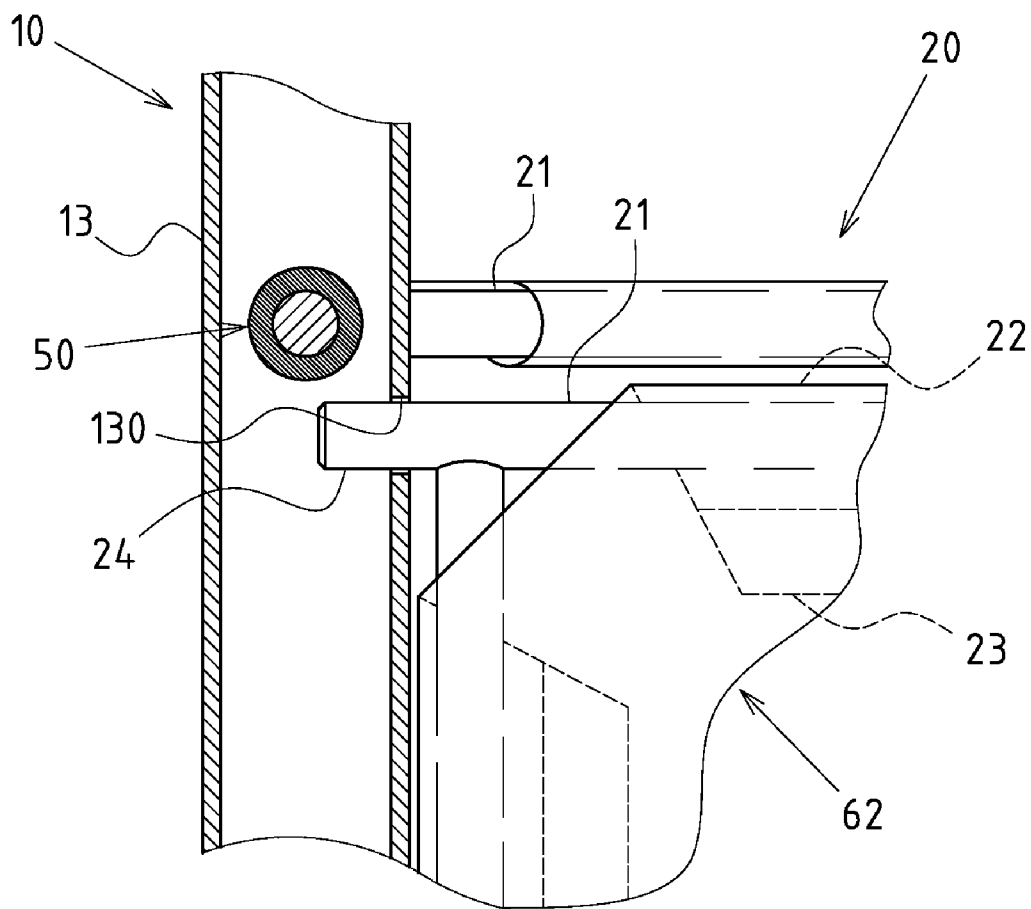


FIG. 9

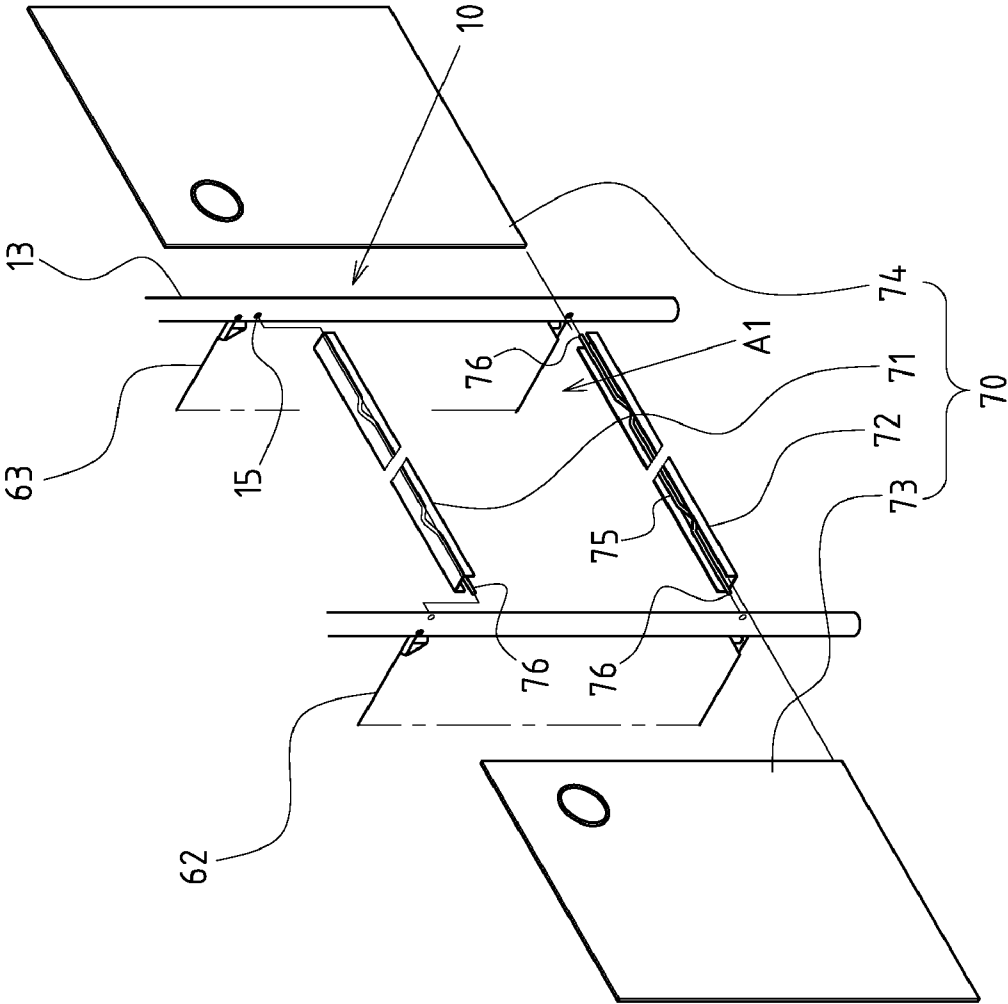


FIG.10

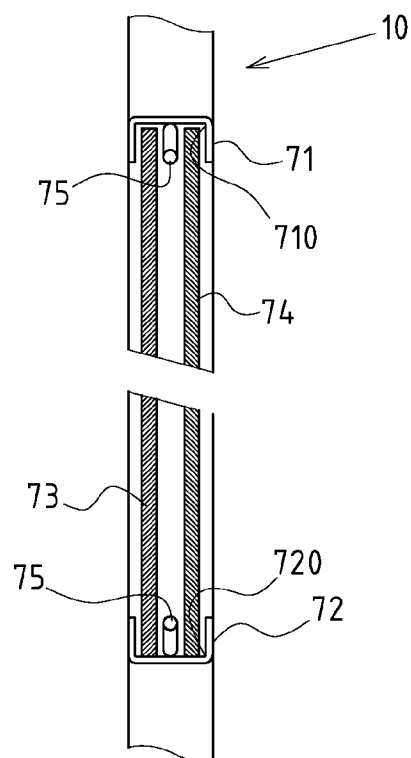


FIG.11

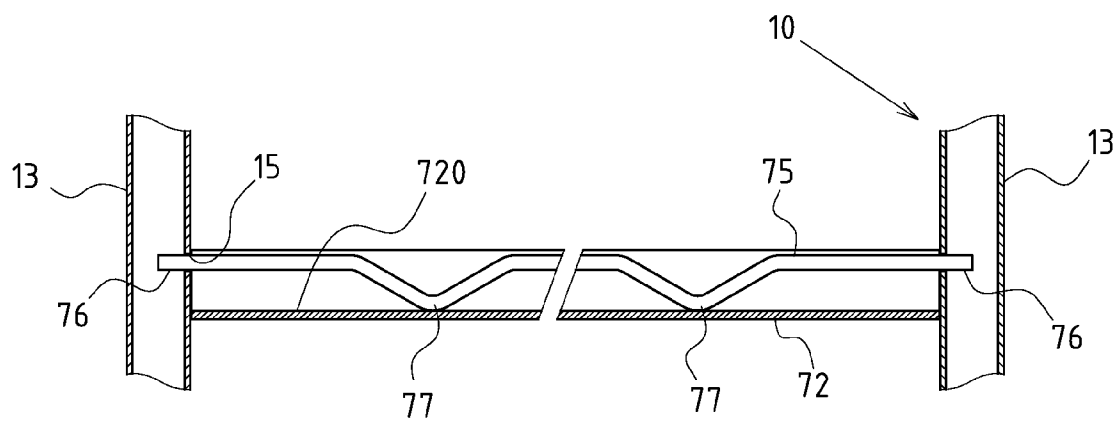


FIG.12

SECTIONAL SHELF**CROSS-REFERENCE TO RELATED U.S.
APPLICATIONS**

[0001] Not applicable.

**STATEMENT REGARDING FEDERALLY
SPONSORED RESEARCH OR DEVELOPMENT**

[0002] Not applicable.

**NAMES OF PARTIES TO A JOINT RESEARCH
AGREEMENT**

[0003] Not applicable.

**REFERENCE TO AN APPENDIX SUBMITTED
ON COMPACT DISC**

[0004] Not applicable.

BACKGROUND OF THE INVENTION

[0005] 1. Field of the Invention

[0006] The present invention relates generally to a sectional shelf, and more particularly to an innovative shelf assembled through the one-piece protruding threaded rods engaging with studs between metal wire shelf units and vertical support members.

[0007] 2. Description of Related Art Including Information Disclosed Under 37 CFR 1.97 and 37 CFR 1.98.

[0008] At present a variety of sectional shelves of different materials are sold on the market, and the varying designs of shelf units and assembly structures create diversified sectional shelves.

[0009] The sectional shelf that is improved by this invention particularly refers to the specific structure formed by the metal wire (e.g. iron wire) with flexible shelf boards for putting articles. This sectional shelf has the advantages of sturdy support of the structure, simply and fast-made lightweight shelf boards and rigid-flexible appearances, so it not only wins a good reputation, but is favored by users as well.

[0010] Thus, to overcome the aforementioned problems of the prior art, it would be an advancement in the art to provide an improved structure that can significantly improve efficacy.

[0011] Therefore, the inventor has provided the present invention of practicability after deliberate design and evaluation based on years of experience in the production, development and design of related products.

BRIEF SUMMARY OF THE INVENTION

[0012] There is enhanced efficacy of the present invention.

[0013] Based on the present invention, the protruding threaded rods are protruded on opposite sides of the metal wire shelf unit, and the through holes are set on the support member with studs. The threaded rods can be inserted into the studs. Since the framework of the metal wire shelf unit can be manufactured together with the protruding threaded rods, the manufacturing technique is simple and it can be mass-produced. Said studs are of simple configuration, thus they can be quickly molded by conventional manufacturing equipment. With respect to the assembly surface, the assembler only needs to insert the protruding threaded rods of the shelf unit into the through holes on the support member and then screw with the studs. The operation is easy and fast, in no need of high technology, and both the protruding threaded rods and

the studs pass the through holes, which have a wide holding area and can firmly assembly. As stated above, the sectional shelf with the assembly structure of a metal wire shelf unit and vertical support member has made great progress in such applications as simple members, lower cost, easy assembly and sturdy structure.

[0014] There are improvements brought about by this invention.

[0015] Based on the structure of M-shape, the vertical support member can bear more strength for the integration, which makes the sectional shelf more sturdy and durable with great improvement of quality after being assembled.

[0016] Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.

**BRIEF DESCRIPTION OF THE SEVERAL
VIEWS OF THE DRAWINGS**

[0017] FIG. 1 shows an assembled perspective view of the preferred embodiment of the present invention.

[0018] FIG. 2 shows an exploded perspective view of the preferred embodiment of the present invention.

[0019] FIG. 3 shows a partial sectional view of the preferred embodiment of the present invention.

[0020] FIG. 4 shows a partial enlarged sectional view of the preferred embodiment of the present invention.

[0021] FIG. 5 shows an exploded sectional view of the assembly of the preferred embodiment of the present invention.

[0022] FIG. 6 shows an assembled sectional view of the assembly of the preferred embodiment of the present invention.

[0023] FIG. 7 shows an assembled perspective view of another preferred embodiment of the present invention.

[0024] FIG. 8 shows a partial exploded perspective view of another preferred embodiment of the present invention.

[0025] FIG. 9 shows an assembled partial sectional view of the metal wire shelf unit of the present invention.

[0026] FIG. 10 shows an exploded perspective view of the door board components of the present invention.

[0027] FIG. 11 shows a top plan view of the upper and lower tracks of the door board components of the present invention.

[0028] FIG. 12 shows a top plan view of the upper and lower slideways with separating member of the door board components of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0029] FIGS. 1-4 depict preferred embodiments of a sectional shelf of the present invention. The embodiments are provided for only explanatory purposes with respect to the patent claims.

[0030] Said sectional shelf A comprises at least two vertical support members 10, which are vertically extended, consisting of the lower end 11, the upper end 12 and the sectional part 13 between two ends.

[0031] There are at least two metal wire shelf units 20, which are transversely mounted between two vertical support members 10 with a regular spacing, consisting of a metal wire frame 21 (may be iron wire). Within the frame is a flexible shelf board 22, on the periphery of which forms the marginal

part 23 (see FIG. 3) being inserted in the frame 21. The shelf board is made of thin plastics plate.

[0032] The present invention also includes a plurality of protruding threaded rods 30, which is protruded on the two spaced positions at two opposite sides of metal wire shelf units 20.

[0033] A plurality of through holes 40 for threaded rod is placed where the metal wire shelf units 20 are assembled in the sectional part of two support members 10. The through holes 40 cross the support members 10.

[0034] A plurality of studs 50 is connected to the through holes, and each includes a convex pipe 51, inside one end of which a screw hole 52 is concaved, and for another end a diameter-expanding end cap 53 is set. Here, the convex pipe 51 crosses the through hole 40 and the end cap 53, which has a tool drive portion 54, covers the outer side of sectional part 13. The screw hole 52 directs towards the inner side of sectional part 13, for the protruding threaded rod 30 of its corresponding shelf unit 20 screwing into the studs.

[0035] The support member 10 can be in the shape of π and defines the integrated horizontal upper frame 14 connecting to upper end 12 of spacing two of the support member. By this invention, the bearing strength of the support member 10 can be increased for the integrated structure and therefore the section shelf A after being assembled becomes more sturdy.

[0036] The tool drive portion 54 of end cap 53 of said stud 50 can be any shape of cross recess, slotted recess and hexagon recess.

[0037] Based on above-specified structures, the sectional shelf A of the present invention is characterized as follows:

[0038] Referring to FIG. 5, in a preferred embodiment of the present invention, the flexible shelf board 22 is first engaged with the metal wire frame 21 (see FIG. 3), and the protruding threaded rod 30 of the shelf unit 20 are inserted into the through hole 40 of the support member 10. Then, tools driven by the tool drive portion 54 of the end cap 53 are used to make the screw hole 52 towards the inner side of the sectional part 13, for the protruding threaded rod 30 of its corresponding shelf unit 20 screwing into the studs (see FIG. 6).

[0039] Referring also to FIGS. 7-10, the sectional shelf A may comprise of at least one metal wire side block board components 60, which include a back shelf board 61, a left shelf board 62 and a right shelf board. The shelf boards (61, 62, 63) form a same structure with the shelf unit 20, also comprising of metal wire frame 21 and within the frame is a flexible shelf board 22, on the periphery of which forms the marginal part 23 being inserted in the frame 21. Thus, a semi-closed compartment A1, for placing articles (see FIG. 10) at the opening side, is enclosed by the side block board components 60 and the shelf unit 20.

[0040] Referring to FIGS. 8 and 9, the metal wire frame 21 of the side block board components 60 faces two positions at the spacing of two sides and has a protruding threaded rod 24. Thus, an insert hole 130 for threaded rod is set in the position where the sectional part 13 for assembling the board components 60. The insert hole 130 is transverse so that the protruding threaded rod 24 for the frame 21 of side block board components 60 insert correctly and is fast assembled.

[0041] Referring also to FIGS. 10-12, preferred embodiments of the present invention, the opening side may be set with the door board components 70, consisting of the upper track 71, the lower track 72, and two sliding door blocks 73 and 74. The upper track 71 is the section of π shape and

defines a upper slideway 710, while the lower track is the section of U shape and defines a lower slideway 720. A separating member 75 is between the two slideways, 710 and 720, to form two sliding spaces and for the sliding of two sliding door blocks 73 and 74. Said separating member 75 has the threaded rods 76 at two ends, and the holes 15 are set at the corresponding places on the support member 10, for inserting said threaded rods 76 and connecting the upper and lower tracks 71, 72 with the support member 10. Also, said separating member can be fixed by connecting with (such as by welding) the upper and lower slideways 710, 720 through two spaced curve parts 77.

1. A sectional shelf comprising:

- at least two vertical frames, being vertically extended and comprised of a bottom end, upper end and sectional part between two ends;
- at least two metal wire shelf units, being transversely mounted between two vertical support members with a regular spacing, being comprised of a metal wire frame and having, within a frame, a flexible shelf board, said flexible shelf board having a periphery forming a marginal part inserted in the frame;
- a plurality of protruding threaded rods, each rod being protruded on the two spaced positions at two opposite sides of metal wire shelf units;
- a plurality of through holes for a respective threaded rod, each through hole being placed where the metal wire shelf units are assembled in the sectional part of two support members, each through hole crossing the support members; and
- a plurality of studs, being connected to the through holes and being comprised of a convex pipe, said convex pipe having a screw hole concaved inside one end of of said convex pipe and a diameter-expanding end cap set in another end of said convex pipe, said convex pipe crossing the through hole and the end cap, having a tool drive portion, and covering an outer side of said sectional part, said screw hole being directed towards the inner side of sectional part, protruding the protruding threaded rod of a corresponding shelf unit into the studs.

2. The sectional shelf defined in claim 1, wherein the flexible shelf board of the metal wire shelf unit is comprised of thin plastics plate.

3. The sectional shelf defined in claim 1, wherein said support member is shaped as π , defining an integrated horizontal upper frame connecting to upper end of spacing two of the support member.

4. The sectional shelf defined in claim 1, wherein the tool drive portion of end cap of said stud is a shape selected from a group consisting of cross recess, slotted recess and hexagon recess.

5. The sectional shelf defined in claim 1, further comprising:

- at least one metal wire side block board components, the block board component being comprised of a back shelf board, a left shelf board and a right shelf board, the shelf boards forming a same structure with the shelf unit, and being comprised of a metal wire frame and a flexible shelf board, within the frame, the flexible shelf board having a periphery forming a marginal part inserted in the frame, enclosing a semi-closed compartment A1 for placing articles at the opening side by the side block board components and the shelf unit, wherein the metal wire frame of the side block board components faces two

positions at the spacing of two sides and has a protruding threaded rod, setting a insert hole for threaded rod in the position where the sectional part for assembling the board components, and said insert hole are transverse, the protruding threaded rod for the frame of side block board components being inserted.

6. The sectional shelf defined in claim 5, wherein the opening side is set with the door board components, being comprised of the upper track, the lower track and two sliding door blocks, the upper track being a section of π shape and defining an upper slideway, the lower track being a section of U shape

and defining a lower slideway, wherein a separating member is between the two slideways, to form two sliding spaces and for the sliding of two sliding door blocks, said separating member having the threaded rods at two ends, the holes being set at the corresponding places on the support member, for inserting said threaded rods and connecting the upper and lower tracks with the support member.

7. The sectional shelf defined in claim 6, wherein said separating member is fixed by connecting with the upper and lower slideways through two spaced curve parts.

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